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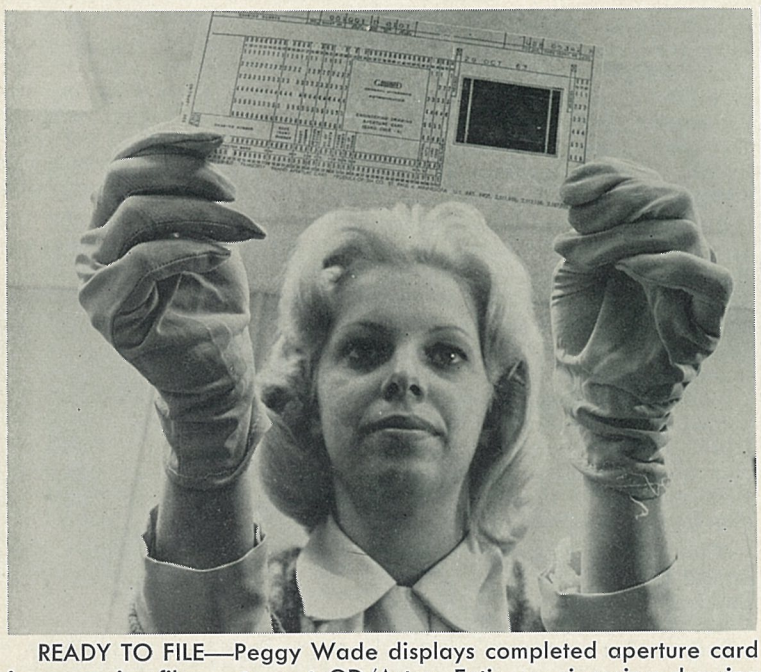
ASTRONAUTICS EDITION

GENERAL DYNAMICS NEWS

Vol. 17, No. 1 PUBLISHED BY GENERAL DYNAMICS CORPORATION Thursday, January 2, 1964



READY TO FILE—Peggy Wade displays completed aperture card in new microfilm system at GD/Astro. Entire engineering drawing is condensed to single film frame, dark rectangle at right.

3,500 Glotrac Documents Compressed Into Microfilm

A stack of "tab" cards slightly over a foot high was delivered to Air Force Missile Test Center by GD/Astronautics recently, to mark completion of the division's first contractually committed microfilm task.

The 15-inch stack of cards, each containing a 35mm film frame, represented 3,500 engineering documents for GD/Astro's Glotrac space vehicle tracking system, and dramatically emphasized that the "little pictures"—microfilm—are a large and swiftly growing part of GD/Astro's business.

Both Department of Defense and National Aeronauticss and Space Administration now have contractual specifications for microfilming engineering data.

Currently "in the works" at GD/Astro for Air Force Ballistic Systems Division is a microfilm project covering both GD/Astro and vendor data on the operational Atlas weapon system.

Two microfilm systems are now in active use at GD/Astro. The first, used primarily for engineering data, consists of aperture cards such as those used for Glotrac. The second utilizes 16mm film strip in compact cartridges, and is used, for example, in GD/Astro's vendor specifications file **(General Dynamics NEWS, Aug. 17, 1960.)**

The aperture card system is, in effect, a marriage of microphotography for size reduction, and computer science to provide a high-speed method of retrieving any particular data required.

Original "E" size drawings (34 inches high) up to 44 inches wide can be handled on one aperture card. Five of the slim cards can store a "J" drawing 15 feet long.

In September, GD/Astro shipped the first package of micro-

(Continued on Page 2)

100% Success Not a 'Target' It's a MUST!

The "Do Good Work" program and its significance to the division's future was the recent subject of statements from one of GD/Astronautics' key engineering executives.

As manager for GD/Astro's space station program, P. E. Culbertson coordinates, under W. H. Patterson, all activities related to one of the division's most promising new projects. His job demands a knowledge of potential customers, and an understanding of their needs, so that GD/Astro's products can fill them best.

"GD/Astro has built an outstanding reputation as a pioneer

(Continued on Page 2)

Golden Named Dynamics Vp

Max Golden, formerly special assistant to the president of General Dynamics Corporation, has been named a vice president of the Corporation, Roger Lewis, president, announced last week.

Max Golden

Prior to joining Dynamics in January, 1962, Golden had been with the Air Force since 1948. He was appointed Deputy Assistant Secretary of the Air Force-Materiel in 1957 and served as AF general counsel, 1958 to 1962.

Born in Passaic, N. J., Golden attended New York University and received his LLB degree from Rutgers University magna cum laude in 1935. He was admitted to the New Jersey bar the following year.

Dempsey Recalls Year's Highlights

A year of achievement in many fields, crowned by the launch of three Atlas boosters in one day, 1963 was reviewed for General Dynamics/Astronautics by President J. R. Dempsey just before year's end.

On the day of the "triple-header," Dempsey spoke to supervision at Plant 71; the following day at Plant 19.

In recounting the year's accomplishments, Dempsey tempered enthusiasm with caution, recalling, "In 1956, I remember thinking that when the first Atlas flew, all our troubles would be over.

"We still have a tough job ahead," he said, "because we are in a tough business.

"We've done quite a few things this year we can be proud of.

"Unquestionable milestone for all of us was the successful flight of AC-2 (Centaur) in November. Centaur had a long and difficult history, and its success shows simply that when both you and the customer determine to do a job right, it pays off. I believe we can go on to make Centaur a sound part of our business for years to come."

Dempsey pointed with pride to GD/Astro products' reliability, noting, "Statistical reliability of a large number of missiles is no longer our problem. We are now building individual units, with a need for high reliability for each flight.

"On May 20, we flew the Mercury-Atlas 9 booster with an Azusa B transponder aboard. This was the 500th transponder flown to date, and it worked exactly as it was supposed to. Of the 500, all but four performed perfectly. They set a 99.2 flight reliability record!

"Since then we have flown more Type C transponders — 69 of them in all and not one has ever failed in flight. I think this shows we can build good equipment, if we all do good work."

(Continued on Page 2)

General Dynamics Reaffirms Merit Employment Policies

General Dynamics Corporation last month reaffirmed its corporate policy in regard to "Merit Employment" to once again remind divisions that "all persons shall receive equal employment opportunities in accordance with their individual job related qualifications, without regard to race, creed, color or national origin."

By executive order signed by Algie A. Hendrix, vice president-industrial relations, and approved by Roger Lewis, president, General Dynamics repeated its position **(GD NEWS**, Sept. 13, 1961), setting forth that "Equal employment opportunities include, but are not limited to, employment, upgrading, demotion or transfer, recruiting or recruitment advertising, layoff or termination, rates of pay and selection for training, including apprenticeship."

Division managers continue to be responsible for implementation of the policy and the Corporate vice president-industrial relations is responsible for policy guidance and coordination.

As did the previous executive order on the subject, issued July 26, 1961, the present order states that "there shall be a continuous effort to maintain awareness of this policy throughout the organization."

General Dynamics Divisions Give Thumbnail Reports on 1963 Activities

Following are brief reports from General Dynamics divisions on significant news developments during 1963.

Centaur Tops News at Astro

Successful flight Nov. 27 of Astronautics' Atlas-Centaur Two, initial space use of potent hydrogen fuel destined for many future space requirements, overshadowed other major Astro accomplishments in 1963 which included the Atlas missile's fourth straight success in the Mercury manned space tests.

J. R. Dempsey
Astro president

During the year Atlas ICBM earned the highest Air Force "in commission" weapon rating, while updating work found Astro crews returning to operational sites. FLOX (liquid fluorine-oxygen) was under study as means of an 88 per cent increase in Atlas SLV payloads for lower orbital missions. Piggyback pods aboard Atlas continued to afford low-cost space research, while newer powered pods, called SATAR, were being developed under the same concept.

GLOTRAC, globe-spanning spacecraft tracking network, was introduced in 1963. Two Azusa tracking systems built by Astro continue to track every ballistic missile launched at AMR which carries Astro-built transponders.

Astro began work on a 2,420-acre test site near Sycamore Canyon; a new $7 million Combined Systems Test Site for Atlas/Centaur/Surveyor at the main plant; and a new $14.4 million Complex 36-B launch site for Centaur at Cape Kennedy.

★ ★ ★

Atomic Enters New Frontiers

General Atomic continued its development of advanced systems of power generation and energy conversion and pushed on into new frontiers as its scientists made significant strides in bringing about controlled fusion reaction, and initiated research in high energy flow phenomena.

Frederic de Hoffmann, GA president

The end of 1963 saw three new General Atomic TRIGA nuclear research reactors placed in operation to make a total of 20 now in use around the world.

The prototype General Atomic High Temperature Gas-cooled nuclear station (HTGR) was over half completed at Peach Bottom, Pa. Conceived and developed by General Atomic, the HTGR will be the first nuclear power station in the world capable of generating commercial electrical power at modern steam conditions of 1,000 degrees F. temperature and pressure of 1,450 psi.

A thermoelectric converter developed for the Air Force and launched into orbit proved that it could convert solar energy into electrical energy to provide auxiliary power in space. General Atomic is currently doing preliminary design under an Atomic Energy Commission contract on a 1,000-megawatt gas-cooled nuclear reactor; studying a system of saline water conversion for the Department of Interior; and entering into research programs, financed by electric power companies, to advance technological economics of nuclear power, and to carry out advanced fuel studies.

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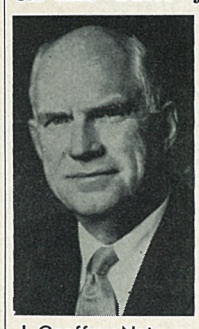
First Canadair Jets Delivered

Major accomplishments at Canadair Limited, Montreal, during 1963 included:

Delivery of the first of 190 CL-41A Tutor jet pilot trainer airplanes to the Royal Canadian Air Force.



J. Geoffrey Notman
Canadair president

Completion of flight testing the CL-41R radar systems trainer prototype.

Sale of three CL-44 swing tail freighter airplanes to Japan Cargo Airways.

Exhibition of the CL-44 freighter and CL-41R trainer at the Paris Air Salon.

Completion of 200 CF-104 Super Starfighter tactical aircraft for the Royal Canadian Air Force.

First of 140 F-104G Super Starfighters accepted for the joint U. S./Canadian military assistance program for NATO countries.

Official go-ahead for the CL-84 tilt wing vertical or short-run takeoff and landing (V/STOL) aircraft, slated for first flight in 1965, jointly financed by Canadian government and Canadair.

Official go-ahead for the CL-89 short range reconnaissance drone system, jointly financed by the British and Canadian governments.

Evaluation by the Norwegian Army of a CL-91 Dynatrac, articulated tracked utility carrier vehicle that is under development for the U. S. Army.

★ ★ ★

Convair Seeks New Products

Research leading to development of new and imaginative products gained more emphasis in 1963 for Convair division, long a major airframe manufacturer.

J. H. Famme

With a distinguished past in research and development, Convair engineers are delving into many new areas. Among them: a plane that can take off and land on a bubble of air, an extremely fast light attack aircraft, vertical floats to turn a ship buffeted by heavy seas into a stable platform, telemetering oceanographic buoys to relay information from mid-ocean, and others that cannot even be touched upon.

Convair's first Little Joe II launch vehicle for NASA made a most successful test flight in August; Convair-produced landing mats now form an impact area in a Marine Corps airfield;

(Continued on Page 3)

FILM CENTER—In center is work area of Astro microfilm center. From left: Jerry Hoke, Katie Jack, Maggi Wade, Jim Hurd, Ed Engledow, Joanne McDonald (foreground), Cynthia Ames, Roy Powell, Thelma Balistreri, Patti Booker. At left Patti Brook prepares tab layout sheet for engineering drawing as Jim Kuhns and Ron Prast are in camera cubicle in background. At right Jerry Hoke, center coordinator, demonstrates desk-type viewer.

Woodington Named To National Office

A. J. Woodington, GD/Astronautics manager of standards and calibration laboratories, has been named chairman of the National Conference of Standards Laboratories.

He served this national organization previously as chairman of the committee on evaluation, selection and training of measurement stardards personnel.

AF Reserve Officer Gets Liaison Post

C. C. Lingenfelder, GD/Astro Dept. 952-2, an Air Force Reserve lieutenant colonel, has been named USAFR liaison officer to all San Diego County Civil Air Patrol organizations.

Lingenfelder was assigned to CAP Group Three by Commander 8645th AF Reserve Recovery Group, to implement new senior and cadet training programs beginning this month.

3,500 Glotrac Documents Compressed Into Microfilm

(Continued from Page 1)

filmed vendor data to Atlantic Missile Range, compressing into a six-inch stack of cards what would have been a bulky bundle of 2,400 drawings (three sets of 800 each).

Heart of the task at GD/Astro is the microfilm center (Dept. 125-1), a part of communication department's still photography section headed by E. H. Boldrick, manager.

Jerry Hoke, photo specialist, is microfilm coordinator, and monitors the section's operations in Bldg. 4, main plant.

Drawings and data to be filmed came to the center after being checked by an engineering pre-film checking group (Dept. 522-5) headed by Ed Mansfield.

Tab sheets, indicating drawing size, type of data, contract, etc., are made up and passed to business data processing group where aperture cards are prepared to a program set up by Frank Yost.

Meanwhile, the data are filmed in accordance with rigid quality control standards of legibility, archival quality, resolution, etc.

Finished film goes to the customer unmounted in roll form, accompanied by matching aperture cards. Complete duplicate cards are retained in the center.

Microfilm documentation on GD/Astro's CT transponder is up-coming, and negotiations are under way with NASA's Lewis Research Center for Centaur coverage.

To study additional uses for the technique, GD/Astro has established a division microfilm committee including Boldrick and W. L. Timm, Dept. 250-2. Centaur, customer service, advanced product planning's proposal development group, purchasing, etc., have shown interest.

"Microfilm is an active documentation method; not just a storage system," Boldrick emphasized. "An aperture card library with viewers would take only one-tenth the space of a blueprint crib and would offer much faster data retrieval.

"Other savings, besides time and space, accrue since the user often needs only to look at data involved—does not require a copy of it. With microfilm he examines it on the spot, without taking the drawing out of circulation for reproduction. If he needs a copy, one can be produced by photographic or electrostatic means in less than a minute."

The 16mm film system can fill many administrative needs. GD/Astro's payroll register for a week (800 computer pages), could be condensed to a 30-foot film strip.

"We're looking to the future," Boldrick said, "when blueprint cribs may be supplanted by a single microfilm library; when design and field engineers in any part of the country can receive the latest verified engineering data of any type instantly, via wire or microwave."

Log Book Entries

W. W. Withee, Dept. 501-0, vice president - engineering at Astronautics, received 25-year service emblem recently.

W. H. Megown, Dept. 401-1, recently received his 25-year service emblem.

Service Emblems

Service emblems due during the period Dec. 16 through Dec. 31.

Twenty-year: Dept. 124-0, M. T. Irwin Jr.

Fifteen-year: Dept. 147-0, J. Q. Friend; Dept. 316-0, D. H. Dickinson; Dept. 372-1, Orison Wade; Dept. 596-2, E. A. Meckstroth; Dept. 662-3, Charles Pruckner; Dept. 718-0, Evelyn N. Glasser; Dept. 758-0, T. W. McGuire; Dept. 780-1, Genevieve C. Stromberg.

Ten-year: Dept. 130-6, Florence M. Morris; Dept. 143-3, D. G. Clark; Dept. 250-1, J. A. Fielder; Dept. 376-5, Jeweline H. Richardson; Dept. 547-3, Victor Salgado; Dept. 580-4, E. J. Guske; Dept. 652-5, C. C. Campbell; Dept. 673-0, E. E. Sweazey; Dept. 756-0, E. I. Osaki, W. D. Valentine; Dept. 759-0, C. C. Russell, Earl Stetzel; Dept. 811-2, R. D. Lutz; Dept. 835-4, Jessie M. Sodos.

Papers Presented

BABITS—V. A., Dept. 592-0. "Laser mixer and IF amplifier." Published: Journal of the Institute of Electrical Engineers (London), October.

BERLAD—A. L., Dept. 593-3. "Interface shapes of non-adiabatic, steady-state crystallization." Published: Journal of Chemical Physics, December.

BERLAD—A. L., Dept. 596-3. "Absolute spectral intensities of some unstable chemical species." Published: Journal of Quantitative Molecular Spectroscopy and Radiative Transfer, December.

FERRISO—C. C. and BREEZE, J. C., Dept. 596-2. "Shock wave integrated measurements of the 2.7 micron CO_2 band between 1200 and 3000° K." Published: Journal of Chemical Physics, November.

FERRISO—C. C. and LUDWIG, C. B., Dept. 596-2. "Spectral emmissivities and integrated intensities of the 2.7 H_2O band between 530 and 2000° K." Published: Journal of Quantitative Molecular Spectroscopy and Radiative Transfer, December.

PAPPERT—R., Dept. 596-0. "Incoherent scatter from a hot plasma." Published: The Physics of Fluids, American Institute of Physics, November.

PIERCE—B. F., Dept. 594-9. "Effects of wearing a full-pressure suit on manual dexterity and tool manipulation." Published: Journal of Human Factors, October.

PIERCE—B. F., Dept. 549-9. "A photographic technique for dynamic anthropometry and its applications to mobility measurement with full-pressure suits," National Meeting, Space and Flight Equipment Association, San Diego, Dec. 13.

ROTHE—E. W., Dept. 596-1. "Total scattering cross sections for metastable helium neon in rare gases," Meeting of American Physical Society, Pasadena, Dec. 19-21.

Retirements

EDWARDS—Mrs. J. V., Dept. 210-0. Seniority date, May 6, 1956. Retired Nov. 3.

WALKER—Arthur R., Dept. 461-0. Seniority date, July 13, 1959. Retired Nov. 30.

Personals

My most sincere thanks and appreciation for the many kindnesses extended to me during my illness, and my deepest gratitude to my many friends throughout Astronautics who presented me with the set of custom golf irons. These fine clubs will always be a remembrance of your thoughtfulness and will be long appreciated.

F. J. "Bud" Parker

* * *

My five daughters and I wish to express our sincere appreciation for thoughtfulness and sympathy expressed by Depts. 336, 330-2 and 780-3 at the passing of our beloved husband and father, Jack.

Eloise Crist, Dept. 330-2

* * *

Our sincere appreciation is expressed to Dept. 987-2 for the floral offering, and to all our GD/Astro friends for their expressions of sympathy at the death of Margaret H. Stewart.

Robert Young, Dept. 987-2 and family.

General Dynamics NEWS

Published by General Dynamics Corporation, One Rockefeller Plaza, New York 20, N. Y.; with editorial headquarters at 3302 Pacific Highway, San Diego 12, Calif., P.O. Box 1950, telephone 296-6611, ext. 1071. Logan Jenkins, editor-in-chief.

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Affiliated editions of General Dynamics NEWS are published in Rochester, N. Y., covering GD/Electronics and Stromberg-Carlson, editorial offices, 100 Carlson Road, HUbbard 2-2200, ext. 2555. Norman Howden, editor; and at Groton, Conn., covering GD/Electric Boat, editorial offices at Groton, HIlltop 5-4321, ext. 300 and 513, Joseph Tracey, editor.

CAPPER, CAMPBELL GET SLV POSTS

Two key executives in GD/Astronautics' space launch vehicles (SLV) project were appointed to new positions recently by C. S. Ames, vice president and program director.

They are H. K. Capper, named manager, configuration management office. and R. S. Campbell, appointed to Capper's previous post as manager of program control and administration. Both report to Ames.

Program control and administration under Campbell has been redesignated Dept. 641. It includes functions of program schedules, operating schedules, program status, administrative services, and (functionally) project systems.

Project configuration management office (Dept. 644) under Capper, is a new department encompassing the previous configuration management function which has been redesignated SLV change control. The new organization has prime responsibility for all configuration management activities on SLV programs within the division.

Three Atlases Fired on Dec. 18, All Successful

VANDENBERG AFB—A new one-day Atlas launch record was chalked up here Dec. 18 with the successful firing of three Atlas vehicles within a brief 13-hour period.

Included in the trio was the launch of an experimental re-entry vehicle (Atlas 233-D); a satellite employing the Atlas/Agena combination (Atlas 227-D); and a Strategic Air Command (SAC) training launch (Atlas 109-F).

The re-entry vehicle was first. It was a part of the Advanced Ballistic Re-Entry Systems (ABRES) program, the second launched from this site and the fifth in the series. (Three were launched from Cape Kennedy.) ABRES is designed to study designed effectiveness of various ICBM re-entry vehicles. Target was a pre-selected impact area 5,000 miles down the Pacific Missile Range (PMR).

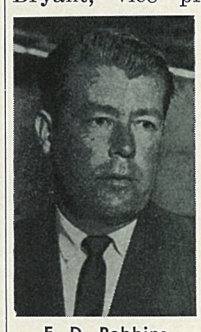
The ABRES launch was conducted by members of the 4300th Support Squadron (SAC), the 576th Strategic Missile Squadron (SAC) and the Air Force Systems Command's 6595th Aerospace Test Wing. GD/Astronautics launch crew personnel were headed by Arnold H. Hoines, launch operations manager, and Val D. Winn, site manager.

Atlas/Agena followed a few hours later from Point Arguello and was followed by a simple Air Force release stating the combination had successfully launched the satellite, nothing more.

Atlas 109-F was launched from a silo-type facility toward a target 4,000 miles downrange. A SAC crew conducted the launch under supervision of the Air Force Systems Command and Astronautics. Key Astro men involved were Hoines, launch operations manager; James Copeland, site manager; and Alex Mau, assistant site manager.

Robbins Named Material Mgr.

Aerospace veteran F. D. Robbins has been named manager of material operations at General Dynamics/Astronautics by E. D. Bryant, vice president — operations.



F. D. Robbins

Robbins succeeds R. E. Poling who has been named to Bryant's staff for special assignment.

Robbins joined the Air Force Plant Representative's office at GD/Astro in 1957, and was subsequently named deputy AFPR in 1959. Previously he was employed by GD/Convair from 1940 to 1950, except for a two-year period of Naval service.

In 1961, he joined GD/Astro as assistant to the vice president—operations, and in November of that year assumed the post of manager, operations control, (Dept. 210), which he held until his recent appointment.

T. F. McCubbin has been named acting head of this department.

Lunch Hour Movies To Start at Astro

A series of lunch hour movies for GD/Astro employees opens Jan. 7, and continues daily Tuesday through Friday thereafter, with showings in Bldg. 17, Room 3, at the main plant at 11, 11:30, 12 and 12:30.

The films cover a variety of interesting and informative topics and are presented under auspices of educational services, Dept. 103-3. Employees are invited to bring their lunch.

100% Success Is a MUST!

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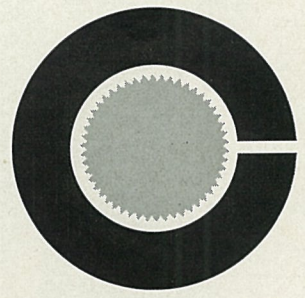
in the U. S. space effort," Culbertson said. "But as national goals change and develop, so the approach we take to our business must change also.

"When the men who developed Atlas first faced this tremendous technological challenge, both they and their customer recognized that the ballistic missile force should be developed on a concept of statistical probability of success for individual launches. Both sought a 'percentage of performance' as they entered what was then a new and unexplored field.

CRAFTSMANSHIP



DO GOOD WORK

"Only a few years later, the picture changed.

"Mercury astronauts were not asked to risk their lives on a 'probability of success.' These men were not interested in percentages. When they bet their lives on our product's total reliability, they wanted a 'sure thing.'

"We can't kid our customers. When each shot involves a human individual and unique national purpose, nobody can be content with statistical success. Each launch must be treated as if it were the only one. Each must deliver.

"And if our products are to meet the new demands imposed upon them, each of us must shoulder a new responsibility. The only path to success is to do our jobs in the best possible way—the right way—every time.

"To achieve 100 per cent success, we have no alternative. Individually and collectively, we MUST Do Good Work."

DEMPSEY RECALLS YEAR'S HIGHLIGHTS

(Continued from Page 1)

Reliability was again the keynote as Dempsey reviewed Gordon Cooper's MA-9 flight which set Atlas' "four-for-four" record in the Mercury program.

Dempsey said 199 Atlases have now flown—41 of those in 1963. Reliability of the space vehicles flown this year stands at 90%!

Looking ahead, the President related the division's achievements of 1963 to the months ahead; its past record to growing capability for the future. Receiving comment were:

Study for use of fluorine-oxygen (FLOX) to extend Atlas' performance opening numerous possible future uses for proven veteran booster.

Authorization of a second launch stand for Centaur at AMR, affording one-a-month Centaur launch capability.

Completion of the first Glotrac segment with five mobile ground stations along the Atlantic Missile Range, and six more to be set up world-wide during 1964.

Acquisition of the new GD/Astro test site adjacent to Sycamore Canyon scheduled for development during coming months.

Award of a life support system contract by NASA's Langley Research Center, plus $1.5 million in additional space science contracts from ARPA and NASA.

Receipt of a SATAR contract for six flight vehicles, with first to fly in 1964.

"In all," Dempsey said, "the year brought us a strong boost in total capability, and in our business.

"We expect more in '64."

General Dynamics Divisions Give Thumbnail Reports on 1963 Activities

(Continued from Page 1)
nine giant tail sections of 134 for the Air Force C-141 have been delivered to Lockheed-Georgia Co.; development is well under way on instrumentation to be installed for space launch tracking over Atlantic Missile Range.

J. H. Famme, division president, looks ahead with optimism as the division's long years of "know-how" are diverted to new and varied products.

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GD/E-Rochester Costs Improve

GD/Electronics-Rochester established a pattern of increasing profitability in its operations for 1963, continuing the improvement trend of the previous year. An effective program to reduce costs and improve operating efficiency was instituted which should aid in meeting the more competitive marketing requirements occasioned by the growing emphasis on fixed price contracting.


R. A. Wilson, GD/E-Rochester president

Several outstanding developments were made during the year to answer such problems as radio interference reduction, microminiature packaging techniques, and new circuit arrangements which improved the customer acceptance of products.

Major production contracts for single sideband radio communications equipment were received from the Army and the Navy, helping to maintain a steady increase in backlog. The division thus goes into the New Year in a stronger position than it has been in for many years.

★ ★ ★

Electric Boat Employment Up

Electric Boat established a new post-war production record during 1963, launching five nuclear submarines, laying keels for five more, and delivering three Polaris submarines to the Navy.


J. W. Jones E-B president

The three delivered were the Lafayette, first of an advanced type of Polaris-firing submarine, and two sister ships, the Alexander Hamilton and the Nathan Hale. The latter was delivered 16 days ahead of schedule.

On June 22 the Groton shipyard launched two submarines simultaneously, marking the first time any yard had done this. The vessels were the Polaris submarine Tecumseh and the attack submarine Flasher.

As it enters 1964 Electric Boat has 15 submarine contracts, 10 Polaris and five attack, and 17,000 employees, the highest employment in division history.

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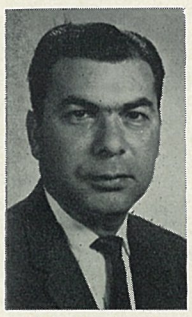
GD/E-SD Scores New Contracts

GD/Electronics-San Diego goes into 1964 as General Dynamics' newest division.


John Lombardo

During the last year, the western GD electronics operation went through the throes of growing pains as it took over its own administration in all areas, emerging by year's end as a full-fledged General Dynamics division.

Under direction of John L. Lombardo, GD/E-SD forged ahead in development of advanced radar equipment and data processing systems. The year past was highlighted by the successful Navy testing of GD/E's Terrain Following Radar. Work continued on REINS radar assemblies for the A5C Naval attack bomber.

Such unorthodox radar concepts as Aircraft Station Keeper and Short Pulse Radar became reality. Capabilities of GD/E-SD high-speed printers and recorders were increased to new levels in the state of the industry.

Looking to the future, GD/Electronics at SD has stepped farther into outer space as it develops computer display equipment for NASA's Gemini and Apollo control center.

★ ★ ★

Quick Recovery Follows Fire

Of all General Dynamics divisions, the year 1963 was probably most trying for Electro Dynamic as a result of a disastrous fire that destroyed the plant at Bayonne, N.J. April 20.


R. B. Carey Jr. Electro Dynamic president

However, despite the catastrophe, the division came back with a rush. Following is a blow by blow account:

June 7: first marine motor shipped six weeks after the fire. (Normal lead time for this type of motor thirty-four weeks.)

June 10: Electro Dynamic employees move into new plant at Avenel, N.J.

July 12: Dynapak high energy rate forming machines transferred from Advanced Products to Electro Dynamic.

Sept. 13: first redesigned 810 series gearless elevator traction machines shipped to Washington, D. C., for use in government office building.

Oct. 11: order received for the two largest horsepower motors to be built by Electro Dynamic in the last 20 years, one for 1,020 hp and another for 1,100 hp.

Nov. 1: air systems blower products transferred from Electric Boat to Electro Dynamic.

Nov. 15: first 50 electronic cooling fans for F-105D fighter bomber shipped from Avenel.

Dec. 12: first Dynapak model 400 completed at Electro Dynamic is undergoing tooling tryout with ultimate customer's dies.

★ ★ ★

GD/FW Releases Specs on F-111

GD/Fort Worth passed several F-111 milestones in 1963: release of most specifications to contractors; early definition of work program and control of costs; inspection of mock-up; and completion of first machined parts.


Frank Davis GD/FW president

An estimated 12 per cent of total F-111 engineering man-hours had been expended by mid-summer, and F-111 models had spent over 9,000 hours in wind tunnel tests.

The government announced Australia planned to purchase 24 F-111s.

During the year, a "substantial number" of SAC-based B-58s were updated to latest combat configuration.

Meanwhile, SAC Hustlers continued to assault existing speed records: a B-58 from 305th Bomb Wing at Bunker Hill AFB sped from Tokyo to London in 8 hours, 25 minutes, cutting the record in half.

Construction of Atlas booster sections and Centaur fairings were among the many "space" projects continued during the year.

In keeping with the company's hard policy of getting most product for its defense dollar, GD/FW graduated the 1,000th person from a value engineering seminar.

★ ★ ★

Liquid Carbonic Capacity Rises

Liquid Carbonic Division celebrated its 75th anniversary during 1963, recognizing its founding Nov. 13, 1888, as the Liquid Carbonic Acid Manufacturing Co. in Terre Haute, Ind. Today the division has facilities in 137 cities, with employment of about 1,800. John A. Edwards is division president.


John Edwards

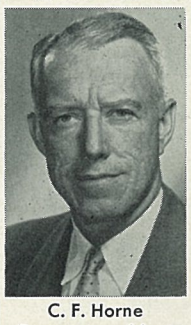
Liquid Carbonic's most outstanding accomplishment during the past year was record-setting progress achieved by affiliates in Central and South America. An increase of 39 per cent in production capacity of carbon dioxide by these Latin American plants marked the highest point since Liquid Carbonic made its first South American investment in 1930.

New Liquid Carbonic production facilities include an addition in Buenos Aires, doubling capacity, making the Argentine plant South America's largest CO_2 producer. At Lima a 100 per cent increase in CO_2 and 40 per cent increase in oxygen capacity was accomplished. A new oxygen plant will go into operation early this year in Cochabamba, Bolivia; a new addition to the CO_2 plant in Santiago will boost capacity of the Chilean affiliate by 200 per cent; in Mexico a major CO_2 plant was opened in August and currently under construction there is the largest liquid oxygen plant to be built so far in Latin America.

★ ★ ★

Pomona Adds Fleet Support

Uninterrupted production of Advanced Terrier and Tartar missiles for the U. S. Navy and development of Redeye and Mauler weapon systems for the U. S. Army continued at General Dynamics/Pomona during 1963 with major announced contracts totaling more than $108 million.


C. F. Horne Pomona president

Support efforts were stressed during the year for the rapidly expanding missile fleet. Four Tartar and six Terrier warships were added during 1963, bringing the total to 47. The first foreign ship with Terrier (Italy's Giuseppe Garibaldi) and the first with Tartar (France's Depetit Thouars) visited the U. S.

The first guided flight of the Mauler missile was achieved at White Sands Missile Range in August, and Redeye successfully met test requirements.

Approximately 70,000 sq. ft. of additional floor space was provided for expanding engineering research and development during 1963.

Emphasis continued heavy on cost reduction with 169 key company and Defense Department personnel receiving value engineering training in six seminars. Product quality improved through installation of new quality audit systems, new repetitive testing and reliability programs and production facility improvement.

★ ★ ★

Demand Jumps For S-C Product

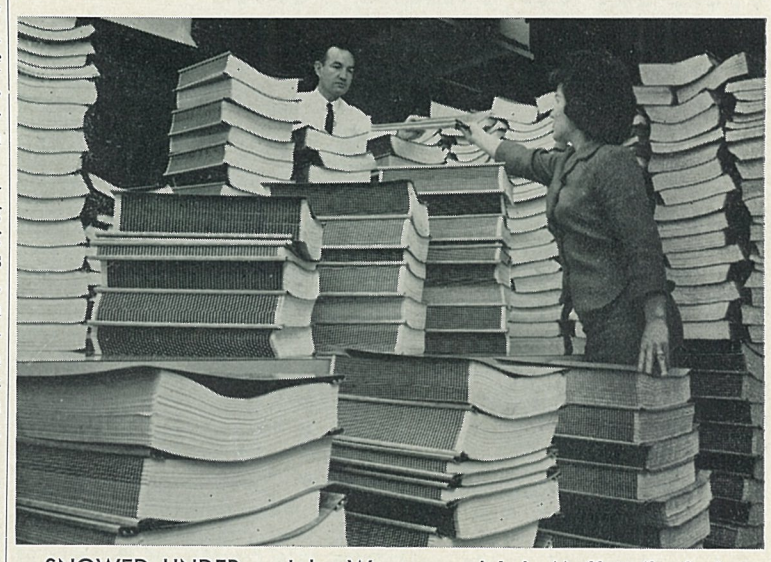
Stromberg-Carlson during 1963 achieved several major advances in the field of electronic switching and enters the New Year with the demand for electronic register-senders more than double that expected. This new product transforms a step-by-step telephone office into a partial common control office for greater flexibility and increased trunking capacity.


John Voss S-C president

During the year the division established its coordinated electronic manufacturing facility and placed in full operation a new printed circuit card assembly area. The division's new plating department increased production capability more than 25 per cent.

Transmission equipment received considerable emphasis during this same period, with the division completing one of its largest complete commercial communications systems programs for the Gopher State Telephone Co., in Minnesota. It totaled more than $2-million and utilized CM multiplexing equipment. Meanwhile, new 240-channel multiplex equipment found a strong market, especially in the industrial field.

The new three-line telephone was introduced during the summer to round out the Stromberg-Carlson instrument line. Continuing sales of XY switchboards demonstrated that there still is a substantial market in the independent telephone industry.


SNOWED UNDER — John Warner and Lois Moffett (both Astro Dept. 954-2) stack copies of Centaur cost estimates, each containing 20,000 pages. This was initial run under ACES (automatic computation of estimates) new Astro computerized cost proposal estimating system. Imagine turning out this volume via desk calculators and typewriters, the method used before ACES!

Computers Churn Out Astro Cost Estimates

Next month General Dynamics/Astronautics begins using a new computerized cost proposal estimating system, the first within General Dynamics Corporation.

It is called ACES (automatic computation of estimates).

From an initial limited use on major proposals, ACES is to be expanded for division-wide application on major projects and programs by the end of 1964.

H. A. Nelson, Astro's manager of estimating, calls ACES "the most sophisticated, accurate and rapid system for processing estimates with high-speed electronic data processing equipment and technology."

Nelson points out that ACES provides for standardization (one form for all proposals) and uniformity of estimate input and resulting cost proposal output, reduces manual summarization and transmittal typing in line departments, projects and division estimating, affords discrete estimates of task, better estimate control, more timely evaluation and analysis and greater flexibility for estimate recycle.

Under development for almost a year, ACES is Astro's answer to the growing demand of customers, present and future, for increased detail in cost proposals and estimates.

And cost estimates are the heart of every proposal.

They must spell out in detail the exact cost of every step to be taken in filling a contract. There may be separate estimates for the 50 to 60 cost elements on each of several thousand tasks involved. They could require estimates for as many as 60 months for each of 200 Astro departments (in ACES each four-digit departmental designation is considered a department). Each individual estimate, in turn, must be multiplied by various rates and factors, added to other factors for analytical purposes, summarized and typed.

(If all estimating possibilities were fulfilled, the number of separate estimate identifications could exceed 57 trillion!)

Astronautics, like other major industries, has performed the bulk of this work manually through desk calculators and typewriters in the past.

High-speed computers, through the use of master tapes and stored data, can reduce work previously requiring weeks to accomplish to a matter of minutes and hours. ACES provides a reproduction output of 500 pages per hour with the information summarized, checked, typed and error free.

Division estimating began an extensive study of the feasibility of what was to become ACES in March, 1963. By June system requirements were established and limited funding made available. Division systems (Dept. 170) and data processing (Dept. 101) provided required system and programming assists.

In June an unscheduled boost to the development occurred. Centaur project encountered urgent requirements for highly detailed estimates on a contract in conjunction with Centaur estimating. A less complex version of ACES was improvised and programmed to help meet restricted time schedules.

On Oct. 25 preliminary test runs were made. Minor improvements followed and on Nov. 22 Centaur estimating provided required input data. The following day an IBM 7074 computer and 1401 high-speed printer went to work on the proposal. They ran estimate data in the form of 200,000 significant bits of information through 5 million calculations, automatically checked them for error and printed them in final customer format.

Each single copy of the estimate contained 20,000 pages!

BIG BLAST — Exhaust from Convair 990 jetliner engine (at right) duplicates wind tunnel conditions as it is turned on insulation test specimens proposed for Atlas-Centaur section. A. E. Jones of GD/Convair 6-31 tilts panel so that Harry Ruscigno of GD/Astro Dept. 961-2 can see how it withstood big wind.

Astro and Convair Teams Use 990A Jet for Missile Tests

Exhaust from a Convair 990A jet engine was used to duplicate missile flight conditions as it was turned full-blast on test specimens in a recent GD/Astronautics program.

Astro and Convair engineers and technicians joined forces to save the company considerable money and still get accurate test data by substituting a 990 jet engine for a wind tunnel. This ingenious method of producing maximum temperature and air flow was used during checkouts of different types of thermal protection systems proposed for the Atlas-Centaur.

Purpose was to determine which would prove the most effective, lightweight, low cost type of insulation to go on portions of the aluminum adapter section which connects Atlas to Centaur.

"We were able to test a large number of panels and more systems at a fraction of the cost of wind tunnel testing, since the nearest facility which can provide the conditions we needed is on the East Coast," said Harry Ruscigno of Astro Dept. 961-2, who coordinated the test program.

Analysis of insulation materials for the Atlas-Centaur inner stage adapter is under direction of Astro's vehicle insulation structures department, supervised by George Dawson.

Engineers coordinated with Convair field operations so that testing could be carried on at the same time runs were made for 990 engine checkouts.

"This close scheduling allowed two operations to be carried on at once," Ruscigno said, "and gave us plenty of time for thorough checks of each specimen." A complete structural dynamic test took just 45 seconds.

GD/Convair thermodynamics lab engineers, under R. F. Holmes, assisted with data acquisition and Dept. 6-31 lab mechanics helped with test setups to make the program a complete cooperative effort between the sister divisions.

Bull Elk Wins Hunting Prize

Blas Vargas' bull elk, shot on a hunting trip to Idaho this season, won him top prize in the annual Big Game Contest sponsored by CRA-ARA Gun Club.

The Astro man's name was drawn for the outboard motor at the Dec. 10 drawing which was attended by at least 175 interested members and guests, said CRA Commissioner Jack Swank of GD/Electronics.

Second prize, a tape recorder, went to John George, also of Astro. His entry was a four-point buck deer, dropped in Utah.

William Shoemaker, another Astro winner, got the .22-cal. pistol. He was eligible by right of his doe, also downed in Utah.

Other prizes went to: John Roth of Convair, air mattress; Pat Jungemann, wife of W. C. Jungemann of Astro, a thermovest; T. H. Chadwick of Astro, pair of shooting glasses; George Bell of Convair, spotlight; H. D. Musick of GD/Electronics, hunting knife; Al Wigers of Astro, two prizes—hatchet and deer bag and deer lure; W. J. Durflinger of Convair, traveling john; G. R. Mayfield of Convair and Robert Kinder of Astro, deer bags.

There were 130 entries this year. Naomi Adams of GD/Electronics drew winning cards.

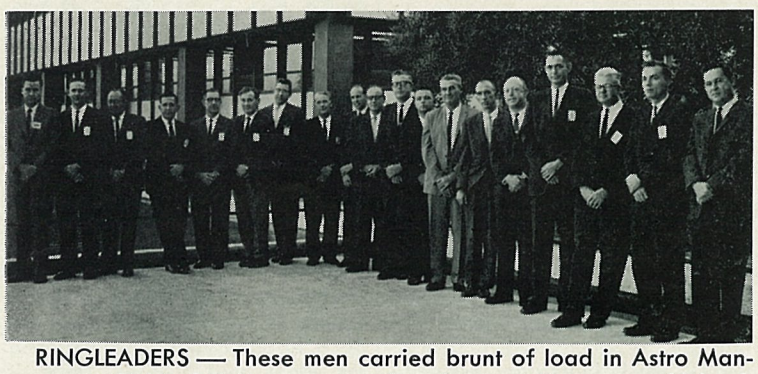
Most Improved Shooter of the Year trophy, a sterling silver ice bucket, went to Art Berry of Lemon Grove. Berry received twice as many votes as his nearest competitor in the open balloting. He has been an associate member of the Gun Club less than a year and has progressed so much in his marksmanship ability that he scored 100-straight in a recent trapshoot.

Guest speakers at the Dec. 10 meeting were Rolla Williams, SD Union sports writer, and John Roumasset, head of the local Department of Fish and Game office. Roy Webb showed movies of big game hunting in Western states.

Joint Camera Club Will Convene Jan. 5

The joint ARA-CRA Camera Club will hold its first meeting of 1964 at 7:30 p.m., Jan. 5 in Photo Arts Bldg., Balboa Park.

Instruction in "painting" large and small areas with light during "open flash" picture taking will be featured. Participants have been asked to bring camera, film and tripod.



RINGLEADERS — These men carried brunt of load in Astro Management Club's fall Management Development Program, which offered three separate courses. Some 400 attended, bringing four-year total to 1,100.

Club to Shoot At Range Sun.

Winners of the December regular CRA-ARA Gun Club shoot were chosen on a "pure luck" basis, getting their names in the hat when they broke the white birds thrown out in each squad.

Al Wigers won 25 lbs. of shot; Reese Jones and C. Miller, each a leather four-box shell holder; Don Neidermeyer and Bill Betteridge, each a leather skeet shell holder; Don Clark, a box of .200 wads.

Next club shoot is scheduled for this coming Sunday (Jan. 5) at Gillespie Field Range.

Also, scheduling is under way for registered trap and skeet shoots sponsored by the Gun Club this year. Commissioner Jack Swank says that there probably will be seven registered ATA shoots, and four or more NSSA events.

Associate memberships for friends of GD people now are on sale at $10 a year. These memberships entitle holders to the same privileges as GD club members, reduction in rates for all scheduled events and a chance at monthly prizes.

GD/Astro Wives Foil Winners

Forty-one fencing devotees assembled in ARA Clubhouse last month for an invitational foil tournament sponsored by San Diego Fencers, local club to which several General Dynamics folk belong.

Nine clubs from throughout Southern California participated, with the host group winning lion's share of honors. A total of 189 bouts were fenced during the one-day affair, and SD Fencers' members placed first and second for men.

In second place for women was Barbara Hurley, wife of ARA Commissioner Mike Hurley, and Inez Kirby, GD/Astro Dept. 158-1, placed third.

Named Fencer-of-the-Day was Terry LaMonte of a Hawthorne club, who with but two years' participation in the sport, yielded only four touches in the eight-bout women's finals.

Annual Tijuana Tour Reset for Jan. 25

General Dynamics people have a second chance to sign for the annual tour of Tijuana highlights with the rescheduling of the trip for Jan. 25.

Fifty GD persons had their plans changed when the trip to the nearby Mexican city, originally set for Nov. 23, was called off at the closing of the border that weekend.

James Hardison of GD/Convair Dept. 15 said that arrangements have now been made for the sightseeing tour the last Saturday of this month. Deadline for signing is Jan. 17 by calling Hardison at his home phone, 276-5805.

Tourists will meet at Balboa Park's Conference Bldg. at 1 p.m., leave their cars there, and board a San Diego Transit bus to the border. There they will transfer to a chartered bus for a tour of the city.

Dinner will be served at the Tijuana Country Club. Arrival back in San Diego is set for 1 a.m.

Cost of the 12-hour tour, including transportation, admission charges, and dinner, is $11 each.

Seven Families Win Garden Club Birds

Seven General Dynamics families dined on turkey as a result of the joint ARA-CRA Garden Club's holiday party last month.

Receiving their birds as door and contest prizes were Jerome Galiley, GD/Electronics Dept. 35-00, GD/Astro's Floy Allen and Ona Mae Carroll, Dept. 141-2, C. E. Walker, Dept. 401-3, B. W. Kurch, Dept. 952-1, Carolyn J. Buman, Dept. 512-1 and Ann Raisanen, Dept. 191-0.

BIG TASK FORCE—These Astro men and women turned in yeoman task in wrapping and sorting some 600 gifts for 150 needy children prior to holiday season. Party is traditional effort to help less fortunate at Christmas.

Scholarships Involve $1,400

The annual GD/Astronautics Management Club scholarship program for sons and daughters of Astro employees will involve total awards of $1,400.

The top winner will receive $800 with $400 going to second place and $100 each to third and fourth-place in the competition.

Application blanks have been distributed to San Diego area high schools and will be available Monday (Jan. 6) for pickup. They must be returned, with required accompanying documents, no later than Feb. 21.

Sons and daughters, by birth or adoption, of Astro employees on the payroll Jan. 6 will be eligible. However, the parent must have completed one full year of service with any General Dynamics Corporation division. Applicants must be graduating from high school in 1964 and must enter a college or university accredited by the American Council on Education.

Dr. A. N. Wilson heads the committee, with Keith Blair, C. C. Campbell, William Duerksen, Eric Herz, Dr. Sam Kay, Ray Sodomka and Emory Thurston as committee members.

Promptness in Filing Disability Requested

General Dynamics people are urged to file claims for weekly disability payments as soon as possible after they start sick leave.

All GD people working within the state of California must file state claims for disability payments during off-job illnesses or injuries directly with the California State Disability Office. This ruling has been in effect since May, 1962.

State forms may be obtained through employee services outlets, or the local State Disability Office.

Group insurance claims should be made as usual through the different divisions' employee services offices.

M. C. Jay to Advise In Center Project

M. C. Jay of GD/Astronautics welding technology center (Dept. 290) has been appointed an industrial consultant to assist during construction of NASA's Manned Spacecraft Center at Houston, Texas.

He is one of two consultants from industry aiding the Army Corps of Engineers at the new facility, and will provide analysis and evaluation of design criteria for general electro-mechanical installations.

Jay previously served in a similar capacity for Corps of Engineers operations during Atlas base activation.

Teen Club to Dance At ARA Clubhouse

ARA Teen Club will welcome the New Year with a dance, 7:30 to 11 p.m., Jan. 4 in ARA Clubhouse.

The Marauders will play for dancing, and members are welcome to bring a guest.

Salvage Schedule Given For Month

Salvage schedule at GD/Convair and GD/Astro yards for the next four weeks is:

GD/Convair—Jan. 4, 18.
GD/Astro—Jan. 11, 25.

Electronic Show Papers Solicited

General Dynamics people who wish their technical papers evaluated for the 1964 Western Electronic Show and Convention must submit material by April 15.

Papers in all electrical and electronic fields will be considered for the WESCON program, Aug. 25-28, Los Angeles.

Authors must send three copies of a 100 to 200 word abstract, including title of paper, name, company affiliation, and address of the author; three copies of a 500 to 1,000 word summary of the paper; indication of technical field into which the paper falls.

Address material to: Dr. R. R. Bennett, 1964 WESCON technical program chairman, Suite 1920, 3600 Wilshire Blvd., Los Angeles.

GD Ice Skating Club Arranges Discount

General Dynamics Ice Skating Club has arranged for discount tickets to a professional ice hockey game (Los Angeles Blades vs. Vancouver Canucks) which are now available at employee services outlets.

Reserved seats in the $3.50 loge section are sold to GD/Astro, GD/Convair and GD/E folk for $3.25. The contest is scheduled in Los Angeles Sports Arena on Jan. 25.

Reservation deadline is Jan. 17. If interest warrants, round-trip chartered bus service may be arranged for an additional fee of about $3.50 per person.

More information is available from Barbara Gilliland, GD/Astro ext. 4041.

Gardeners to Hear Tips on Rose Pruning

CRA and ARA gardeners will hear how to prune and take care of their roses at their next joint meeting Wednesday (Jan. 8) in the Floral Association Bldg., Balboa Park, 7:30 p.m.

Two rose experts from the San Diego County Rose Society, Charles Lewis and James Kirk, will be present to explain rose nurture and answer questions. New 1964 All-America roses which will be on the market this year will be described.

ARA Commissioner Everett Henderson will outline a new discount offer to members which allows them to buy roses at 25 per cent discount.

GD/E MAN TO CHAIR DUCKS UNLIMITED

Payne B. Johnson, manager of communication for GD/Electronics at San Diego, has been named chairman of the 1964 San Diego County Ducks Unlimited steering committee. He will coordinate all activities for the annual fund-raising dinner.

Another GD man, George W. Cowan, GD/Astro purchasing agent, will serve as secretary.

Sports & Recreation

ARA Calendar

(GD/Astronautics Recreation Association has some 40 activities in operation for employees. For information, call ARA Headquarters, ext. 1111.)

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ASTRONOMY — Observation program, "Above San Diego," club observatory, ARA area, each Friday, 8 to 10:30 p.m.

ASTRO NOTES — Meets and rehearses each Monday, 7:30 p.m., ARA Clubhouse.

CAMERA CLUB — ARA-CRA meeting Jan. 5, 7:30 p.m., Photo Arts Bldg., Balboa Park.

CHESS—Play each Thursday, 7:30 p.m., ARA Clubhouse.

GARDEN CLUB — ARA-CRA meeting Jan. 8, 7:30 p.m., Floral Assoc. Bldg., Balboa Park.

HI-FI/MUSIC — Electronics workshop open 7 to 9:30 p.m., Monday through Friday, ARA Clubhouse.

PISTOL—Matches, 9:15 a.m., Jan. 12, San Diego Police Pistol Range, Home Ave. and Federal Blvd.

RADIO — Meeting 7:30 p.m., Jan. 8, club station, ARA Clubhouse.

SNOW SKI — Ski equipment swap session, 7:30 p.m., Jan. 8, ARA Clubhouse.

TEEN CLUB—Dance, 7:30-11 p.m., Jan. 4, ARA Clubhouse. "Marauders" band. Admission 25 cents per person.

WIVES' CLUB — Luncheon meeting Point Loma Inn, Jan. 15. Social hour, 11:30 a.m., luncheon, 12:30 p.m. Reservations with Helen Johnston, 277-2308.

Schindler in Front In Pistol Shooting

Final ARA Pistol Club matches of 1963 found Al Schindler scoring 289 in a .45 Short National course, followed by J. S. Knutson with 277 and Ralph Sanderlin with 293.

In master class of a .22 Police Course on the same occasion, Roland Schneider led Sanderlin, 294-293, and Warren Ranscht scored 291 to best John Bennett's 280 in expert class.

Carl Johnson led sharpshooter bracket with 266, while Les Vivian fired 256, and Lyle Ewing shot 225 in marksman class.

Next matches will start at 9:15 a.m., Jan. 12.

Snow Skiers to Hold Swap Session Jan. 8

Snow ski fans can save money and have fun at a swap session to be sponsored by ARA Snow Ski Club at 7:30 p.m., Jan. 8 in ARA Clubhouse.

The informal gathering will afford those with equipment to sell, buy or trade, to contact their opposite numbers within the skiing fraternity.

Mrs. Rebecca Fyffe Sq. Dance President

Astro Nauts, ARA square dance club, has installed its sixth president, first woman in club history to hold that office.

Mrs. Fyffe

She is Rebecca Fyffe, wife of Dave Fyffe, ARA model railroad commissioner, who has been active in the club since joining its beginners' class only a year ago. She succeeds Walt Burhop.

Astro Nauts conducts instruction sessions on Tuesdays, and regular dances Thursdays, both 7:30 to 10 p.m. in ARA Clubhouse.

ARA Commissioner Marty Stutz said those starting instruction last fall have advanced to intermediate level at this time, and suggested regular participation in the Tuesday sessions for beginning dancers who previously dropped from the group.

Julie Urban Winner In Fishing Contest

CAPE KENNEDY — Julie Urban, lone feminine entry in the ARA-sponsored fishing contest here, showed her male counterparts a thing or two by copping one of two top prizes.

Julie won the salt water trout division with an 8-lb., 3-oz. catch. C. C. Lewis finished second (5 lbs., 6 oz.) and W. B. Rauch third (4 lbs.).

Bill Leffingwell won the largest salt water fish division with a 17-lb., 12-oz. king fish.

ARA HAMS SECOND IN RELAY LEAGUE

ARA Radio Club placed second in its class in the National Field Day conducted by American Radio Relay League last June, according to results just announced.

Sixteen club members assisted in manning the club station (W6-UUS) for 48 hours during the event, which was designed to test communication capability under emergency conditions.

Jim Denneny and Don Jenkins placed first and second respectively in a recent club contest in operating efficiency, and Bill Roden won a Christmas turkey as member making maximum use of club facilities in a December contest.

This weekend (Jan. 4, 5) the group will participate in an ARRL-sponsored VHF contest, operating from Skyline Lodge at Palomar. John Creamer, Plant 19, is coordinating participation.

ARA Bridge Players Win Tourney Honors

Thirteen members of ARA Bridge Club won first place awards in the Pacific Southwestern Regional ACBL tourney Dec. 2-6 in Coronado.

They were Gene Alford, John Budd, Sam Cohen, Bob Combs, Francys Darr, Marvin French, Neal Hampton, H. H. Johnson, Tom Mawson, C. R. McCullough, Mitzi Rustad, Art Saastad (two firsts), Mary Saastad.

In club master point competition Dec. 13, Neal Hampton and Bob Small were north-south winners in Section A, with Eve Leasure and Frederica Combs winning east-west. Mr. and Mrs. Wayne Evans won N-S in Section B, with Mr. and Mrs. Gordon Blake, E-W champs.

ARA Float, Revamped, Wins Another Award

ARA's float decked in new holiday trim captured its second trophy in two weeks by winning sweepstakes award in North Park's Toyland Parade Dec. 8. Original version topped its division a week earlier in an El Cajon event.

For the first parade, the float took a "Hickory Dickory Dock" theme, then was revamped by ARA Water Ski Club for the subsequent event, under direction of ARA Commissioner Roy Kirkeby and Bill Johnson.

As before, Bud Davies and Ben Lachance arranged a musical accompaniment and Johnson drove with his brother Carl as co-pilot. Sons of Davies and Dick Mitchell operated the clock mechanism, and Eddie Kirkeby and John Creighton served as forward lookouts.

Astro Equestrians Vote New Officers

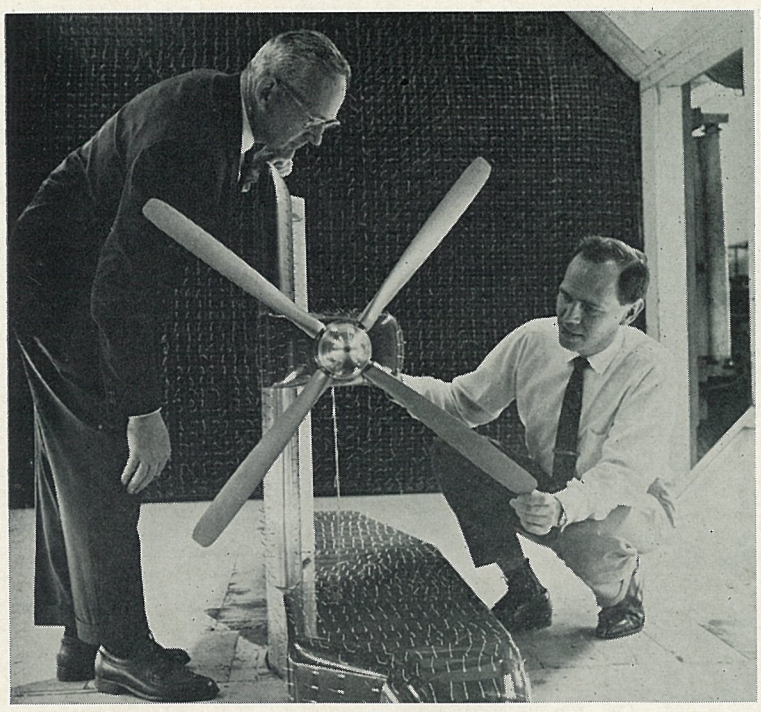
Astro Equestrians, ARA riding club, has elected new officers to guide its five-year-old organization, with Joe Dvoracek, president, Jim O'Shea, vice president, Tom Bingham, treasurer, and Mary Behnke, secretary.

Next club meeting will be at 8 p.m., Jan. 14 in ARA Clubhouse. Prospective members have been urged to attend this session to get details on the ample space available in the club's corrals and pasture off Murphy Canyon Road.

Junior Riders, organization for the group's younger set, won two trophies for entries of a hay wagon and surrey in North Park Toyland Parade, Dec. 8.

On Dec. 15, some 130 persons were feted to turkey dinner at Equestrians' holiday party.

ROUND THE BASES — (1) On behalf of K. J. Bossart, K. E. Newton, Astro director of operations-AMR, accepts plaque from Col. G. A. Finley, president of Canaveral Post, American Society of Military Engineers. Plaques recognized Bossart's contribution to Mercury tracking station built by students. (2) Astro softballers at Cape Kennedy won Missile League championship. Front row: Bob Becker, John Steimetz, Al Beauprea, Charlie Murray, Jim Carter, Ray Poole; back row: Clarence Cox, Ed Raleigh, Jay Cooper, Dick Landress, John Davis, Wayne Fisher, Tom Henry. (3) Ken McCarthy, left, president of Astro AMR Management Club, accepts from Little League President Cliff Lewis, championship trophy after club-sponsored team won league. Lewis is manager of Azusa field service center. Others active in league were Bob Goldinger, Jim Starkey, Tom Henry. (4) Astro's Freeman D'Vincent, center, made presentation before dining-in ceremony of 4300th Aerospace Support Squadron, Vandenberg AFB. He is shown with, from left: Col. James N. Webb, squadron commander; Col. Eugene L. Hudson, commander, 4000th Aerospace Support Group; Col. Verl L. Schoenfeldt, VAFB commander; Lt. Col. O. D. Filley, deputy commander, 4300th Squadron. (5) AMR Management Club's exhibit at Orlando, Fla., during "Salute to Space Achievement" was viewed by more than 67,000. (6) Frank Sturgill, Con-Trib-Club member at Cape Kennedy, turns over $10,000 check to John Hughes, United Fund representative, who is also Astro's weapons launch operations manager at AMR. (7) Nancy Smith and Beverly Miller, receptionists for Astro at Vandenberg AFB, occupy new reception center, a far cry from converted barracks Astro folk occupied for last five years. (8) K. E. Newton, right, Astro director of operations-Atlantic Missile Range, delivers $1,000 GD/Astro check to O. E. Tibbs, chairman of contractor division of United Fund at Cape Kennedy.



CL-84 TEST MODEL — John Struthers (left), in charge of GD/Convair low speed wind tunnel, and O. E. Michaelsen, CL-84 aerodynamics engineer for Canadair Limited, examine half model of new V/STOL aircraft during wind tunnel testing at GD/Convair.

Canadair V/STOL Model Tested in Coast Tunnel

Wind tunnel testing on models of Canadair Limited's new twin-engine, vertical or short-run takeoff and landing (V/STOL) aircraft was completed at General Dynamics/Convair in mid-December.

O. E. Michaelsen of Canadair, aerodynamics group leader for the CL-84 as the new plane is designated, said that last month's evaluation in GD/Convair's low speed wind tunnel firmed design for the V/STOL aircraft which does everything a helicopter can do at twice the speed.

The CL-84 program is being financed jointly by Canadair (General Dynamics subsidiary) and the Canadian government. Two prototype aircraft will be built with first flight scheduled for mid-1965. Another year of flight testing will be necessary, say Canadair officials, to develop the plane to "sales demonstrator" status.

The plane is designed for both transport and tactical support missions, with a wide variety of roles seen for its use. As a military plane, the CL-84 could be put to work for helicopter or destroyer escort purposes, reconnaissanse and surveillance, tactical support transport, casualty evacuation, search and rescue, aircraft carrier liaison, and communications.

A commercial version would be suitable for city-center to city-center passenger transport.

The CL-84 is a propeller-driven aircraft with high-set tilt-wing and low-set tail. It rotates its wing through a right angle for vertical flight, and employs a combination of partly tilted wing and flap-deflected slipstream for short-run takeoffs to increase the lifting power.

In normal forward flight the CL-84 has a conventional airplane configuration, characterized by its small-span wings and large-diameter propellers. Only the rotor at the tail indicates its V/STOL capability.

For vertical takeoff, the wing —complete with engines and propellers — is swung through a right-angle from the conventional position until it points upward. The aircraft then lifts itself straight off the ground by propeller thrust alone, with additional lift and longitudinal control provided by the tail rotor. Once aloft, the wing swings down again to the normal forward-flight position. Vertical landing is achieved by reversing the sequence.

First testing on this concept in GD/Convair's wind tunnel was in 1959 with Canadair engineers spending about nine months at the San Diego division testing different configurations. They returned during 1963 for further evaluation of versions leading to the current design. Last month's testing of a half-model measured aerodynamic forces and investigated airflow characteristics in V/STOL and forward flight conditions.

Canadair aerodynamics engineers accompanying Michaelsen to the San Diego location were Ross Clark, James Pike, and George Tateishi. Ken Kimber, Canadair engineering group leader, was at GD/Convair to initiate the test program.

Instrument Society Will Meet Jan. 9

General Dynamics members of the Instrument Society of America, San Diego Section, will meet Jan. 9 in the Crystal Room of the U. S. Grant Hotel.

Mary E. Hoskins, supervisor of Eli Whitney Metrology Laboratory, Sheffield Corp., Dayton, Ohio, will talk on "Standards Work-Piece Instrumentation Personnel Environment."

Dinner hour is 7 p.m., program at 8.

For reservations call Dick Barnett, GD/Electronics Plant 2, ext. 23; W. R. Holmes, section president, GD/Convair Plant 1, ext. 2121; or Charles H. Hill, Astro Plant 71, ext. 1322.

"Welcome home, neighbors! Did you have a good desert vacation?"

General Dynamics to Buy Historic Quincy Shipyard

General Dynamics Corporation has agreed to purchase the physical assets of the Fore River Shipyard, located at Quincy, Mass., from Bethlehem Steel Co., Roger Lewis, president, announced last week.

The price was not disclosed.

The Quincy Yard includes building ways, building basins, outfitting piers, a wet basin, shops, office space, and equipment capable of building and overhauling all classes of ships.

"Acquisition of the Quincy Yard," Lewis said, "will supplement the existing facilities of our Electric Boat Division at Groton, Conn., and will provide the Corporation with greater flexibility and capacity for a wider range of marine work."

Operations at the Quincy Yard will be shut down by Bethlehem prior to Electric Boat's commencing operations at the yard. Current employment at Quincy is approximately 2,000.

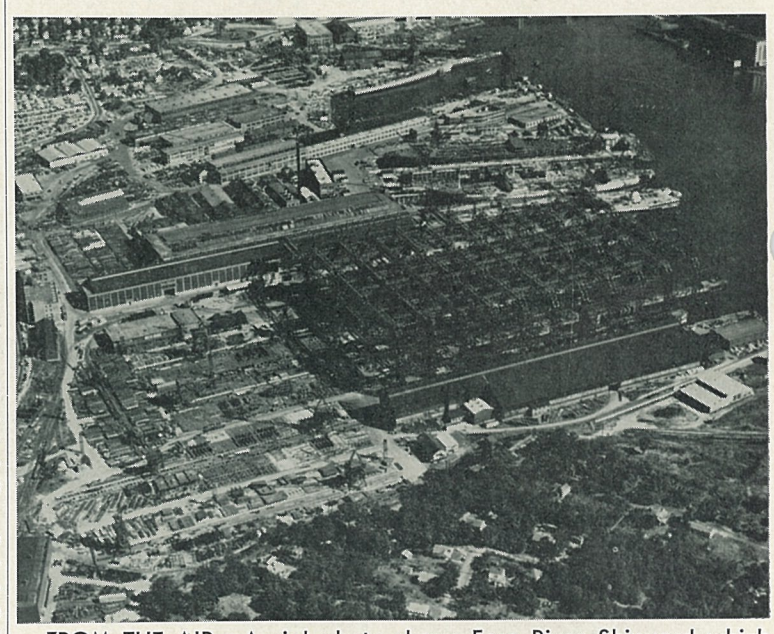
General Dynamics will take over construction of two attack-type nuclear submarines now under contract with Bethlehem. The prototype of these submarines is under construction at Electric Boat.

During its nearly 80 years of operations, the Quincy shipyard has built more than 500 ships. The roster includes the battleship Massachusetts, the famous aircraft carriers of World War II, Lexington, Wasp, Bunker Hill and Hancock, the luxury liners SS Independence and SS Constitution, and a host of heavy and light cruisers, destroyers and oil tankers.

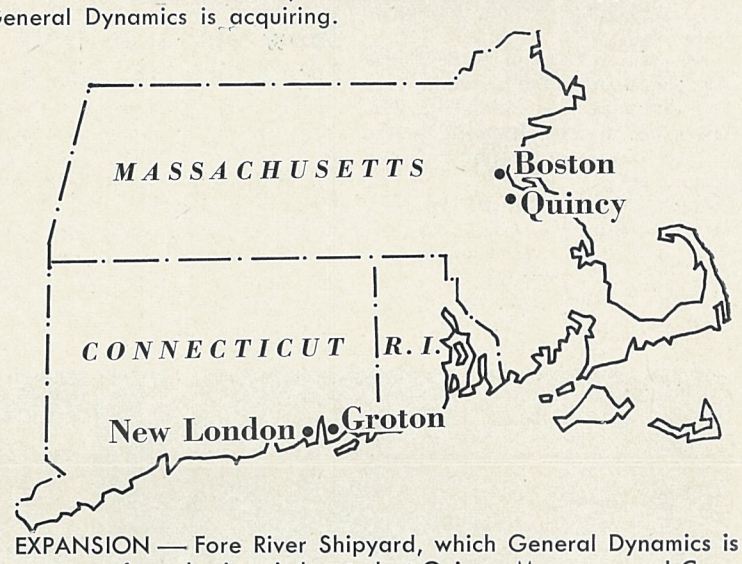
Among the Quincy-built ships now serving with the U. S. Fleet are eight that carry General Dynamics Tartar or Terrier guided missiles. These include the Albany, Columbus, Long Beach, Springfield, Farragut, Luce, MacDonough and most recently the Navy's first nuclear powered guided missile frigate, the Bainbridge, DLG(N)-25.

The Quincy Yard was founded in 1884-1885 as the Fore River Engine Co., by Thomas A. Watson of East Braintree, Mass., who was associated with Alexander Graham Bell in development of the telephone. It was purchased 28 years later by Bethlehem Steel. During World War I the yard built and delivered 36 destroyers in 27 months and five days, while also constructing submarines and merchant ships. During World War II over 100 naval combat vessels were built at Quincy, totaling 750,000 tons.

The shipbuilding basins, ways, shops and other facilities occupy 155 acres in Quincy and Braintree on the western bank of the Fore River.



FROM THE AIR—Aerial photo shows Fore River Shipyard which General Dynamics is acquiring.



EXPANSION — Fore River Shipyard, which General Dynamics is in process of purchasing, is located at Quincy, Mass., around Cape Cod from Electric Boat division at Groton, Conn.

GENERAL DYNAMICS JOINS BELGIAN FIRM TO FORM COMPANY

General Dynamics Corporation this week announced formation of a jointly owned company with Ateliers de Constructions Electriques de Charleroi (ACEC), a leading Belgian electrical engineering firm.

The new company will be known as Etudes Techniques et Constructions Aerospatiales (ETCA) and will have headquarters in Charleroi, Belgium.

ETCA will combine the production and European marketing experience of the Belgian company, and the technological capability in space systems of General Dynamics for participation in the growing European space effort. Activities of the new company will include design and manufacture of satellites and space tracking equipment.

General Dynamics has long been active in the international field through direct sales of aircraft, nuclear reactors, military equipment and other products. The new company, however, represents General Dynamics' first joint undertaking with a European company. ACEC has more than 21,000 employees and annual sales in excess of $130 million.

The board of directors of the new company will be composed of three representatives each from General Dynamics and ACEC. The director general of the new company will be Maurice Desirant, deputy director of ACEC's electronics division.

GD/FW Praised For Outstanding Schedule Keeping in B-58 Mod

Delivery of B-58 No. 71 to SAC last week spelled finish to current Phase II updating and virtually completed Hustler modification work at GD/Fort Worth for the time being.

All told, 183 B-58s have been phased through various modification programs starting late in 1959.

"Of course, most B-58s were phased through several programs," said E. E. Finch, manager of modernization-development departments.

He added: "On this last program, as on all others, our people did an outstanding job of turning out this work on schedule."

Modification work was carried out in four major programs.

In the trainer bomber project, eight test Hustlers were converted to tactical status. (The final TB-58 is now in work and is slated for delivery in April.)

The production conversion program saw 11 flight-test B-58s changed into regular SAC bombers.

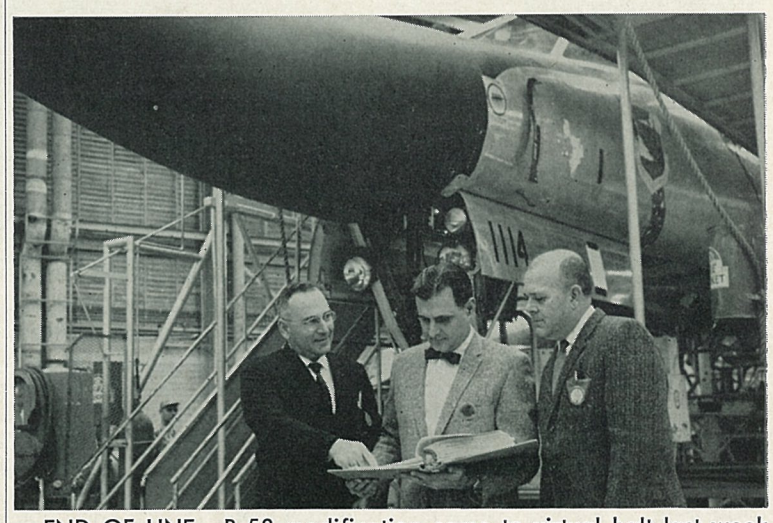
"Flash-up" modification, involving certain electronic changes, included 13 B-58s in Cycle I operations and 38 B-58s in Cycle II.

Supersonic modifications were made on 21 other Hustlers.

The recent modification program was done in two phases.

Fifty-nine B-58s were cycled through Phase I, which consisted mainly of adding multiple-weapons and escape-capsule capabilities.

Phase II involved upgrading maintainability and reliability of communications systems, flight control systems, and electronic countermeasures systems.



END OF LINE—B-58 modification came to virtual halt last week with delivery of No. 71. Making final check are, from left: W. H. Mann, chairman modification task control; Jo Muncy, Dept. 96 general foreman; and W. L. Patrick, quality control.

GD

ASTRONAUTICS EDITION

GENERAL DYNAMICS NEWS

Vol. 17, No. 2 PUBLISHED BY GENERAL DYNAMICS CORPORATION Wednesday, January 15, 1964

Organization Set for New Systems Dept.

Completing realignment begun late last year, organization and key figures in General Dynamics/Astronautics' new systems development department were announced last month.

The new organization is designed to foster and support products' emergence from the division's technological complex into successful competition in the aerospace market.

Now consolidated under Mort Rosenbaum, vice president—research, development and engineering, systems development is headed by Vice President W. H. Patterson.

Reporting to Patterson are T. W. Wills, C. R. Walker, F. J. Dore, P. E. Culbertson, E. W. Boteler, Andrew Kalitinsky, J. D. Phelan, Bruce McKay, P. M. Prophett.

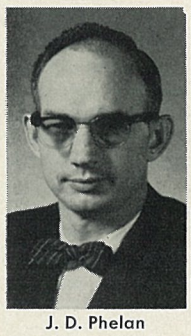
Dore fills the post of director, advanced systems. He joined the company in 1947 at GD/Convair, became assistant project engineer on the Atlas program in 1955,

W. H. Patterson

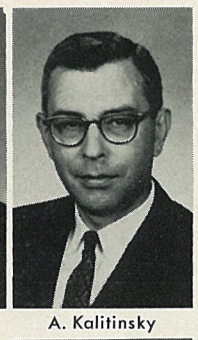
F. J. Dore

E. W. Boteler

P. E. Culbertson



J. D. Phelan



A. Kalitinsky

Bruce McKay

P. M. Prophett

and a project engineer two years later. Since that time, he has held key GD/Astro engineering posts.

Culbertson has been elevated to director, orbital space station, in the new organization. He holds BS and MS degrees in aeronautical engineering from Georgia Tech and University of Michigan respectively; except for a year, has been with General Dynamics since 1952.

Boteler becomes director, Centaur. Before joining GD/Convair in 1951 as senior aerodynamics engineer, and later chief of aero-

(Continued on Page 2)

OLD AND NEW—Astronautics is replacing all old oval-shaped identification badges such as those shown with new plastic badges, also shown. Letters indicate wearer's affiliation like "S" for service, "R" for representative. Most common will be one in upper right-hand corner with "T" on dark circular field. It is employee's temporary badge, often called "idiot's" badge.

New Group of ID Badges Appear, Completing Transition Period

A group of new identification badges will appear for the first time at General Dynamics/Astronautics Monday (Jan. 20), marking the end of a transition period dating back one year.

All replace disc-shaped metal badges and are of the same size and shape as plastic badges issued to Astro, Air Force, NASA and permanent service and contractor personnel at Astro.

The basic difference is that the new group will be marked with letters, rather than identification photographs, indicating the wearer's affiliation.

For instance, General Dynamics Corporation personnel without personal badges (still acceptable to security) will be issued badges with a large "C." Colored tabs will denote security clearance on "C" badges, while others will feature colored bars.

(Security designations will be identical to those now in use. No color indicates no clearance, green denotes confidential, red, secret and purple, top secret).

"C" badges, "R" badges for temporary representatives, and "S" for service (those performing services, not military service personnel) will feature color designations.

An "E" badge will be issued for employee services; an "M" for central medical; and a "T" badge for Pacific Telephone.

A "T" badge in a dark circle will be a temporary Astro employee's badge.

Present badges with identification photographs are unchanged. Colored circles on these denote security clearance. Air Force personnel have an "AF" on a red tab, while other non-employees have non-marked red tabs. One exception is NASA employees who wear a black tab. Salaried Astro employees wear blue tabs, while hourly employees wear yellow, green or white, dependent upon shift worked.

(Some Astro employees have the letter "A" embossed on their colored tabs. This identifies those working permanently at GD/Convair facilities or those frequently visiting these facilities in their regular work assignments.)

Green Named Program Mgr.

J. E. Green has been named manager of program control, electronic programs, at GD/Astronautics by S. L. Ackerman, vice president and program director.

He replaces G. G. Prentice who has accepted a new post as chief of operations program control, reporting to F. D. Robbins, manager of material operations.

Green is a Marine Corps veteran who holds BS degrees in business administration and mechanical engineering and a Master's degree in business management, all from University of Colorado.

He joined the company in 1956 as an engineering planner, and (following scholastic leave to obtain his advanced degree) later served as master scheduler and schedules engineer.

He was engineering planning and estimating supervisor in August, 1962, when he was named chief, task control and estimating for electronic programs (Dept. 011-2), the post he held until his recent appointment.

Author of 'Executive Myth' Will Speak

GD/Astronautics Management Club meeting tonight (Jan. 15) at OceanHouse will hear Dr. Edward Stainbrook, author of "The Myth of the Overworked Executive," as guest speaker.

The event, for members and their ladies, will open with a social hour at 5:30 p.m., followed by dinner at 7.

Atlas Weapon System is sponsoring department. Admission is $3 per person.

Machine Shop Leads Craftsmanship Race

Plant 19 machine shop (Dept. 715) is leading the race in GD/Astro's Craftsmanship competition among 13 major production departments. Processing (Dept. 733) and sheet metal (Dept. 732) are close behind in standings based on Quality Reports for November.

First awards in the Craftsmanship program will be made in February. The competition is part of a division-wide GD/Astro effort encouraging employees to "Do Good Work."

GD Retirement Benefit Upped For Salaried

A vastly improved retirement program for non-represented salaried employees of General Dynamics Corporation has been authorized by the Board of Directors, Roger Lewis, president, announced last week. The new program will apply to all divisions except Liquid Carbonic and Material Service, which are covered by separate programs.

The changes will have far-reaching effects throughout the Corporation and update and increase prior accrued benefits, provide more protection against loss of earning capacity, and will cost the individual 50 per cent less, Lewis explained in a personal letter mailed to all employees affected.

The program became effective Jan. 1, 1964, subject to approval of the Internal Revenue Service. Major improvements include reduction of employee contributions by one half; updating and increasing all prior accrued benefits; provision for a permanent and total disability benefit; liberalization of early retirement benefits.

Employee contributions are being reduced from 5 per cent to 2½ per cent of base salary rate in excess of the Social Security wage base (presently $4,800 annually) without reduction of the monthly retirement income earned.

"The retirement benefits of persons who retire or terminate in 1964 prior to IRS action will be determined in the first instance in accordance with the prior provisions of the retirement plan and will be adjusted as required as soon as IRS approval is obtained," A. A. Hendrix, vice president, industrial relations, declared.

In addition to reduction of employee contributions, the improved plan provides for recomputation of accrued benefits on the basis of compensation as of Dec. 31, 1963, rather than the yardstick of previous compensation levels. In most cases this will result in substantially increased ultimate benefits. In this regard, however, special provisions will apply to those who retire within the next five years.

The new program also includes a total disability benefit providing full earned benefits at the time of disability, providing certain eligibility requirements are met.

Early retirement benefits are also substantially liberalized under the improved plan. The reduction in benefit now will be only 3 per cent for each year of early retirement between ages 60 and 65. For those retiring before age 60, the reduction will be slightly more than 3 per cent per year.

The new program further provides for increase in interest rate from 2½ per cent to 3½ per cent on employee contributions.

Provisions of the new plan will be explained in detail in employee meetings in the near future.

Daily Mail Pouch Service Links Astro With AF, NASA Locations

Daily mail pouch service between GD/Astronautics San Diego operations and division offices at 14 Air Force and NASA locations throughout the country was placed in operation recently to provide swifter and more economical service.

The "SAC Jacket" service, as it is popularly called, serves GD/Astro operations at Altus, Dyess, Fairchild, Forbes, Warren, Lincoln, Norton, Plattsburgh, Schilling, Vandenberg and Walker AFBs, Edwards RS, Patrick AFB (for Cape Kennedy), and Huntsville, Ala.

Mail to these locations is consolidated in a mail pouch at GD/Astro's main plant; then travels unopened to its destination.

Inter-office mail envelopes are preferred for use in the new service. However, company first class and "flat mailer" envelopes are acceptable when properly addressed and sealed by the originator.

Indicia envelopes should not be used for "SAC Jacket" mail.

D. R. Archibald Named to Weapons Committee, To Work on 'Effectiveness Requirements'

D. R. Archibald, manager of reliability control—AWS, of GD/Astronautics has been named a member of the Weapons Systems Effectiveness Industry Advisory Committee.

This group, sponsored by the Air Force Systems Command, is tentatively slated to function for approximately one year. It will bring together experts in particular areas, each of whom will be assigned to one of five special task groups.

Archibald will work in a group in development of methods for determining effectiveness requirements.

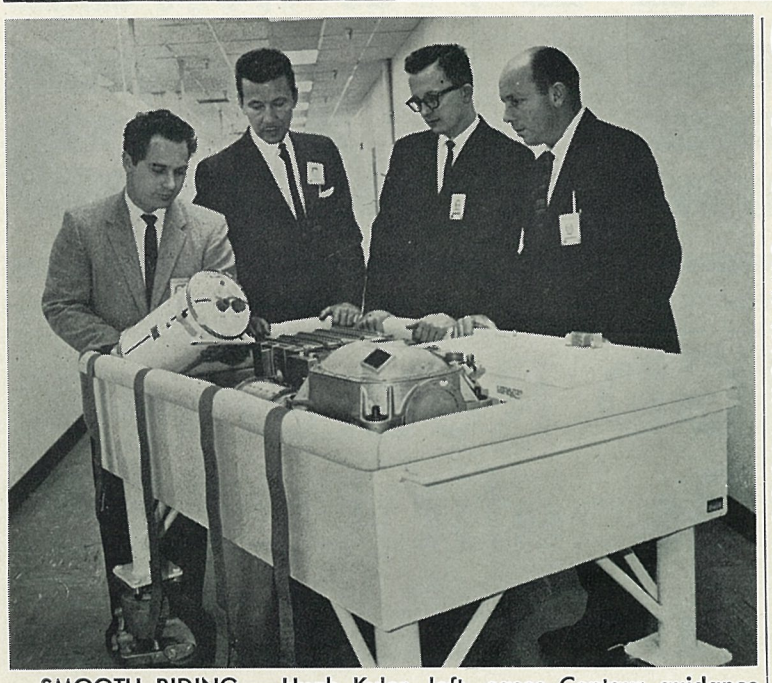
"System Effectiveness" is a new term being used to describe complete assessment of military systems' value and capability with emphasis on factors or elements affecting systems' cost and performance. Air Force objectives center around incorporating all necessary considerations throughout system development, production, deployment and use.

Col. E. A. Kiessling, headquarters, AFSC, was directly responsible for naming Archibald.

GD/Astro Opens First Value Seminar of '64

GD/Astronautics opened its first value engineering seminar of the year this week, with 40 employees from various departments taking part in the 40-hour program.

The seminar is the first of 12 scheduled at GD/Astro during 1964.



SMOOTH RIDING — Hugh Kyler, left, eases Centaur guidance component into compartment in special handling cart, as Al Pedo, Dick Smith and Don McMurtrey observe. Other components are already nested in foam-lined cart. Note pneumatic, spring loaded wheels.

Special Foam-Lined Carts Guard Precious Guidance Components

Three carts turned over last month to Centaur inertial guidance laboratory at GD/Astronautics marked a milestone in the division's material handling efforts.

The carts were specially designed to prevent damage to delicately calibrated Centaur inertial guidance components, and exemplify a material handling problem which was solved before damage occurred.

The five units involved in each Centaur guidance package are valued at nearly a quarter-million dollars — yet are small enough to fit atop a desk. Aboard Centaur they guide the high-energy space vehicle thousands of miles into space — yet they are so sensitive that a four-inch drop to a solid surface threatens their reliability.

Recognizing the problem of accidental droppage as units are transported during assembly phases, the Centaur guidance group consulted GD/Astro's material handling and packaging engineering (Dept. 405) under general supervisor G. M. "Bud" Coole.

Susbequent meetings with representatives of NASA and affected GD/Astro departments led to design of the special handling carts.

Three of the units were built. Each is topped with a compartmented tray which cradles each component in its own foam rubber nest, and is fitted with "safety belts" to hold them gently in place. Carts roll on spring-loaded, swiveled wheels with pneumatic tires.

"We were particularly gratified to be asked to review a potential problem, rather than one which had already resulted in costly damage," Coole said. "This 'before-the-fact' action, marked by the cooperation of all departments involved, is a key factor in eliminating expense from material handling damage."

Figuring prominently in development of the carts were C. E. Meadows of NASA, Don McMurtrey, Dept. 405; Al Pedo, Dept. 954-3; Dick Smith, Dept. 250-2; Hugh Kyler, D. W. Geyer and Dave Peterson, Dept. 967-5.

Two of the carts will be used at GD/Astro's main plant; the third is destined for Centaur's Cape Kennedy launch site.

Log Book Entries

Service Emblems

Service emblems due during the period Jan. 1 through Jan. 15.

Twenty-five-year: Dept. 652-2, T. H. Chadwick.

Twenty-year: Dept. 143-1, Ruby B. Dean; Dept. 193-1, J. C. McFall; Dept. 381-0, Dorothy Fischer; Dept. 832-1, R. T. Andrews.

Fifteen-year: Dept. 125-0, W. W. Gault; Dept. 250-1, D. H. Eldridge, E. T. Southworth; Dept. 401-4, A. S. Cwiek; Dept. 451-0, Miriam S. Bock Jr.; Dept. 480-0, J. C. Hopkins; Dept. 758-0, A. W. Crosthwaite; Dept. 832-1, Laura S. Hammer; Dept. 842-1, J. L. Trenton.

Ten-year: Dept. 143-2, Irene B. Neal; Dept. 144-5, A. H. Parker; Dept. 146-5, E. R. Williams; Dept. 290-4, C. H. Sandoval; Dept. 344-2, P. A. Weaver; Dept. 377-2, J. G. Brown; Dept. 401, Jewell S. Falconer, H. J. Kollars, Dorothy E. Shurley; Dept. 452-0, Yoshito Koba; Dept. 525-2, J. J. Perkins; Dept. 527-3, C. H. Fischer; Dept. 652-1, A. C. Redelsheimer; Dept. 661-4, E. R. Henneberg; Dept. 682-2, A. F. Sanchez; Dept. 756-0, J. C. Baze; Dept. 970-1, Delores D. Guest.

SCHILLING AFB

Twenty-year: Dept. 390-1, W. F. Webster.

SYCAMORE

Ten-year: Dept. 573-3, Philipp Bourgeois.

Personals

We wish to express our deepest gratitude to our Astronautics and Convair friends, especially those in Astro Dept. 835, Astro and Convair methods departments, Convair plant engineering, for their kindness and sympathy, and flowers and Mass cards received at the death of our wife and mother, Julia B. Hangen.

Milton C. Hangen, Convair Dept. 423
Milton L. Hangen, Astro Dept. 835

* * *

Your sincere expression of sympathy on the loss of my husband, John B. Hall, Dept. 835-2, is thankfully acknowledged and truly appreciated.

Margaret Hall

Retirements

JOHNSON—Wayne R., Dept. 975-3. Seniority date, Sept. 14, 1959. Retired Dec. 1, 1963.

JOHNSTON—L. G., Dept. 143-5. Seniority date, Jan. 6, 1959. Retired Dec. 31, 1963.

TREASE—Charles J., Dept. 462-0. Seniority date, Jan. 21, 1959. Retired Oct. 30, 1963.

Save Materials—Don't Throw Your Job Away

General Dynamics NEWS

Published by General Dynamics Corporation, One Rockefeller Plaza, New York 20, N. Y.; with editorial headquarters at 3302 Pacific Highway, San Diego 12, Calif., P.O. Box 1950, telephone 296-6611, ext. 1071. Logan Jenkins, editor-in-chief.

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Convair Editorial Offices, Bldg. 32, Plant 1, GD/Convair, Mail Zone 1-320. P.O. Box 1950. San Diego 12, Calif. Telephone 296-6611, ext. 1071. Staff: Grayce Fath, Helen Pemberton.

GD/Electronics (San Diego) news contact: Helen Wood, 298-4641, ext. 1377, Plant 1, Bldg. 51.

Fort Worth Editorial Offices, Col. 72, Adm. Bldg., GD/Fort Worth, Mail Zone 0-50, P.O. Box 748, Fort Worth 1, Texas. Telephone PErshing 2-4811, ext. 2961. Staff: Dave Lewis, editor; Mary Beck.

Pomona Editorial Offices, Room 106-D, Bldg. 1, GD/Pomona, Mail Zone 3-3, P.O. Box 1011, Pomona, Calif. Telephone, NAtional 9-5111, ext. 6226-5279. Staff: Glenn Kehr, editor; Carol Sowers. Daingerfield news office, P.O. Box 947, Daingerfield, Texas. Telephone Lone Star, Texas, 2211, ext. 424.

* * *

Affiliated editions of General Dynamics NEWS are published in Rochester, N. Y., covering GD/Electronics and Stromberg-Carlson, editorial offices, 100 Carlson Road, HUbbard 2-2200, ext. 2555, Norman Howden, editor; and at Groton, Conn., covering GD/Electric Boat, editorial offices at Groton, HIlltop 5-4321, ext. 300 and 513, Joseph Tracey, editor.

Organization Set for New Systems Dept.

(Continued from Page 1)

dynamics, he served in engineering capacities with Ryan Aeronautics, then the Navy Bureau of Aeronautics, Washington, D. C. He joined GD/Astro in 1962 as chief of advanced systems technical development.

Assigned as director, Voyager, Kalitinsky is a veteran of nuclear propulsion research. Formerly chief engineer for the Nuclear Energy for Propulsion of Aircraft project, Oak Ridge, Tenn., he joined Dynamics at GD/Fort Worth in 1955 as manager of nuclear research and development; subsequently held related posts after transfer to GD/Astro in 1961.

Director, marketing, is Phelan, a native of Missouri, and University of Minnesota graduate. His career has included service as vice president of marketing for the Budd Co.'s Electronics Division, and in engineering and sales organizations of such firms as ITT Federal Labs, Collins Radio, etc.

C. R. Walker

T. W. Wills

McKay, formerly director of current programs in the previous advanced product planning department, becomes director, Space Launch Vehicles (SLV) and Atlas Weapons System (AWS). Before joining GD/Astro he held executive engineering positions with Marquardt Aircraft, Piasecki, and at Bell Aerosystems was assistant vice president and director of marketing.

Prophett becomes director, special projects and MILA. The aerospace veteran joined GD/Convair in 1942 as a B-24 test pilot, soon rose to flight captain. By 1951 he was manager of flight for GD/Convair, and by 1955, chief of engineering flight test. He moved to GD/Astro as director of base activation in 1961 and guided activation of Atlas sites to completion.

Walker, continuing in the post of manager, proposal development, to which he was named in October, served at both GD/FW and GD/Convair before joining GD/Astro in 1956. He was manager of division systems before his recent assignment.

Wills continues as assistant to the vice president, a post in which he has served since 1961. He joined the company at GD/Convair in 1940, and has served as GD/Astro's chief of personnel administration, industrial relations department.

Reserve Unit Seeks Ex-Navy Personnel

Former Navy enlisted personnel among GD/Astro employees have been invited to investigate opportunities existing for them as members of BuShips Activation, Maintenance and Repair Division 11-1, USNR.

GD/Astro's H. D. Wexler, Dept. 835-2, ext. 1998, is division supply officer, and Don Stearns, Dept. 951-2, ext. 4304, is executive officer. Either may be contacted for details.

The division has openings for all rates and ratings. Personnel are restored to the rate held at discharge, and receive four days' pay for attending drills held 8 a.m. to 4:30 p.m., Saturday and Sunday, on the second weekend of each month. Participants also accrue retirement benefits.

The unit meets at San Diego Naval Station in buildings near Gate 9.

HONORED—Astro recently honored men above with safe driving awards recognizing 27 years of accident-free driving in all. From left are Palmer Kleven, John Huff, A. V. Smith, Everett Benyard, C. L. Smith, Minor Terrell, Karl Trondle, R. A. Straus and Frank Smith. Huff, Straus and Frank Smith received five-year awards, others two-year awards.

Vehicle Operators Recognized For Many Years of Safe Driving

Nine vehicle operators who log a total of 136,000 miles annually were honored recently with GD/Astronautics safe driving awards.

The awards recognized 27 years of accident-free driving without material or vehicle damage of any type.

Five-year awards went to John Huff, Frank Smith and R. A. Straus. Everett Benyard, Palmer Kleven, A. V. Smith, C. L. Smith, Minor Terrell and Karl Trondle received two-year awards.

W. J. Stanley, manager of plant engineering, joined with J. W. Garrison, chief safety engineer, and John Speed, transportation general foreman, in praising the accomplishments of the award winners.

Thirty-two safe driving awards for two-year accident-free periods have been presented to date at Astro, while nine drivers have been honored for five years of safe vehicle operations.

One driver, Mrs. Pat Guthauser, is the lone seven-year award winner. A station wagon driver, Mrs. Guthauser, annually logs from 30,000 to 35,000 miles in and around San Diego.

In addition to those mentioned, five-year awards have gone to E. C. Graham, K. W. Hazard, Henry Medeiros, A. R. Reed and Pat Stantz, another woman station wagon operator. Two-year awards have gone to George Barragan, C. W. Chestine, P. C. Gilbert, W. S. Griffiths, J. F. Hunter, D. B. Hutton, J. R. Lee, Jose Meza, T. R. Patrick, D. A. Reiner, W. W. Royal, G. J. Saiko, B. L. Silvas, Willard Smith, G. F. Swarez and S. H. Young.

Sycamore Canyon Test Site operates its own motor pool and issues safe driving awards to those eligible.

B. J. Nichols is the lone seven-year award holder there, while A. L. Canales has completed requirements for a five-year award. Two-year awards have been issued P. W. Deaett, Homer Riley and J. Wilburn.

'Brush Up' Course In German Offered

GD/Astro employees wishing to "brush up" on conversational or technical German may do so at economical rates in a course to be offered under ARA auspices.

A series of eight lessons to be presented individually or to groups of no more than eight persons, will be taught by Julia Feron at a cost of $24. An optional test can add about $2.50 to this price.

Those interested are asked to call the instructor at 295-0359. Meetings will be held in ARA Clubhouse at 7:30 p.m., starting either on Jan. 20 or 27, dependent upon response.

Lunch Hour Movies Include Ship Film

Titles of upcoming movies to be shown during lunch hours at GD/Astro, Tuesday through Friday, have been announced by educational services, Dept. 130-3, which coordinates the showings.

"More Ships For Less Money" demonstrating basic principles of value engineering as applied by the Navy will be shown at 11, 11:30, 12 and 12:30 Jan. 16 and 17. On Jan. 21 and 22 "The Other City" concerning cancer and its danger signs will be shown.

Employees are welcome to bring their lunch and view these films in Room 3, Bldg. 17, main plant.

Lessons to Improve Memory in Prospect

GD/Astro employees and their families are invited to attend—free of charge—the first of a series of 10 memory improvement lessons to be offered under ARA sponsorship.

Initial session is at 2 p.m., Jan. 18 in ARA Clubhouse. For those who wish to continue after the first meeting, total cost of the Saturday lessons is $20 per person. Instructor is Don Robinson.

Details are available from Betty Berry, 277-4380.

MIXED EMOTIONS—Young fellow is startled by introduction to "Rollo & Son," titles adopted by Roland Soucey, Los Angeles area distribution supervisor for General Dynamics' Liquid Carbonic Division, and his son Leo, 16, as they entertain at San Diego's Mercy Hospital. Soucey annually devotes his vacation to his hobby of "clowning" for shut-in youngsters throughout Southern California.

Newly Formed Firm to Seek Space Business

The "wide, wide world of General Dynamics Corporation" gained added international stature earlier this month upon announcement of the formation of a jointly owned company with a leading Belgian electrical/electronics engineering and manufacturing firm.

General Dynamics and the Belgian organization, Ateliers de Constructions Electriques de Charleroi (ACEC), share in creation of the new firm, Etudes Techniques et Constructions Aerospatiales (ETCA).

The new company will operate initially from Charleroi, an industrial center of about a quarter-million population some 40 miles south of Brussels.

ETCA's activities will include design and manufacture of satellites and space tracking equipment, teaming ACEC's production and European marketing experience with General Dynamics' pioneering aerospace technical background—particularly that of its San Diego-based GD/Astronautics division.

Under Sam L. Ackerman, GD/Astro vice president, Astro's electronic programs department, has amassed years of experience in satellite systems, as well as in development and production of its highly successful Azusa and GLOTRAC space tracking systems.

General Dynamics President Roger Lewis, John A. Dundas, Corporate vice president—international, and Ackerman will serve as General Dynamics representatives on ETCA's board of directors.

B. G. Anderson, presently GD/Astro's manager of trajectory measurement and control, will become deputy managing director of the new firm and resident representative of GD/Astro. He will report to Maurice Desirant, managing director.

Desirant is also deputy director of ACEC's electronics division.

ETCA's president will be Paul Delacave of the Belgian firm, with Dundas of General Dynamics as vice president.

ACEC, General Dynamics' European partner in the new effort, is a major producer of heavy electrical equipment on that continent, with products including large turbines, transformers, generators, etc. It is also a major producer in NATO's HAWK surface-to-air missile program.

Organization of the joint Dynamics-ACEC venture has been in progress for about a year. Corporate officials, Ackerman, and J. D. Phelan of GD/Astro systems development department, were involved in the negotiations.

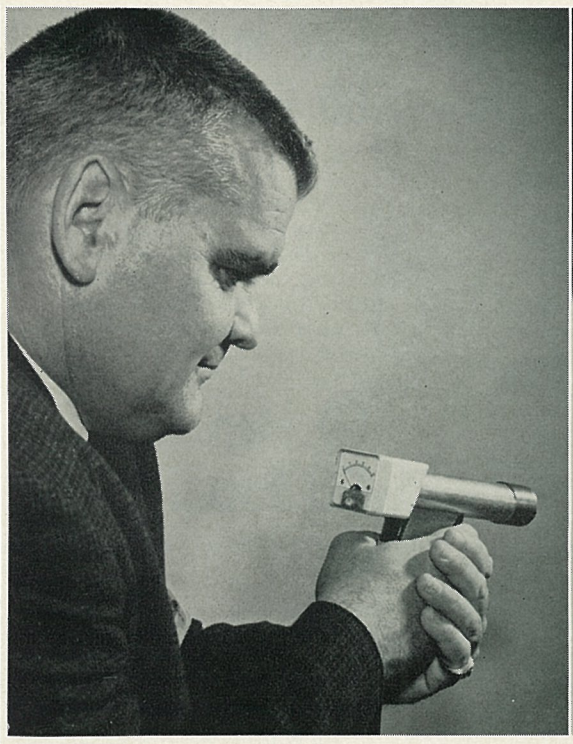
Desirant to Inspect San Diego Facilities

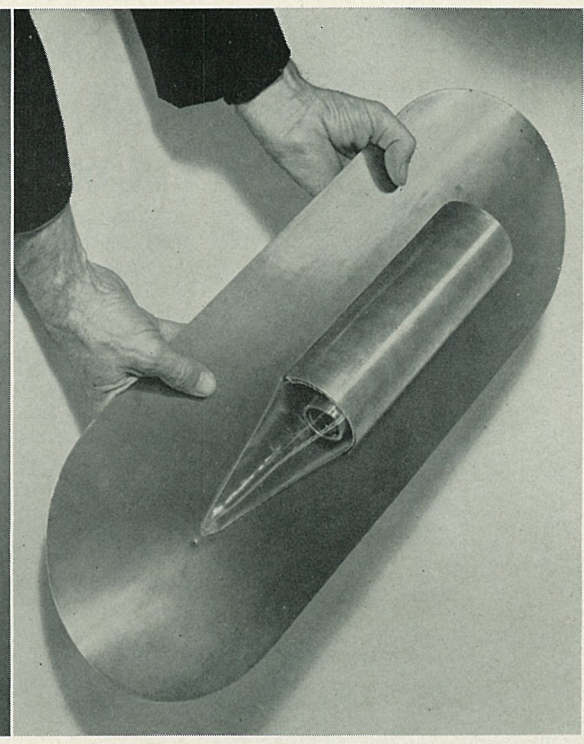
Maurice Desirant, managing director of ETCA, is visiting San Diego this week as guest of Sam L. Ackerman, GD/Astronautics vice president—electronic programs.

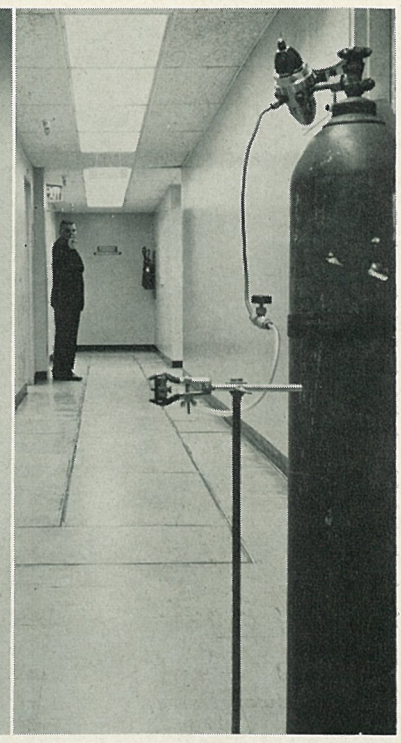
M. Desirant will inspect electronic facilities and installations at GD/Astro, and confer with General Dynamics executives in the area, including John L. Lombardo, general manager of GD/Electronics — San Diego.

EDITOR TO LECTURE ON TRADE WRITING

GD/Pomona employees interested in writing articles for trade publications are invited to a lecture by Alfred Rosenblatt, West Coast editor of Electronic Design, 4:30-5:30 p.m., tomorrow (Jan. 16), Bldg. 3 auditorium. Additional information may be obtained by contacting C. E. Myers, ext. 3210, or A. E. Lambert, ext. 8174, of educational services.







FLAME FINDER — Unique hydrogen flame detector, held at left above by George Carmichael of GD/Astro's Dept. 592-2, and aimed, at right, at invisible burning hydrogen gas, registers presence of flame. In center is mockup of planned missile-borne version to be carried piggy-back to "watch" for fires during flight. Principle is based on infrared discrimination techniques.

GD/Astro's Anderson Shifted to Belgium

B. G. Anderson of GD/Astronautics, selected as deputy managing director of ETCA — new firm established jointly by General Dynamics and ACEC of Belgium — is a veteran satellite and space tracking systems engineer.

B. G. Anderson

He has been with GD/Astro since 1956, and is presently manager of trajectory measurement and control, electronic programs department. At GD/Astro he has been associated with such programs as design and development of the Azusa trajectory measuring system, and the ARENTS satellite.

Anderson holds a BE degree in electrical engineering from Yale University, with graduate work at Columbia and UCLA.

Plans call for Anderson to leave San Diego this month to assume his new duties in Belgium.

McNally Transferred To Electro Dynamic

Joseph T. McNally, cost analyst in the Corporate controllers office in New York City, has been transferred to the Electro Dynamic division at Avenel, N. J., as manager of general accounting.

He is succeeded in New York by John Papachristou, promoted to staff analyst reporting to Richard C. O'Sullivan, director of cost analysis.

McNally has been with General Dynamics since 1960. He received his BBA degree from Pace College, NYC, and prior to joining GD was with United Press International.

Papachristou, a 1959 graduate of Georgia Tech with a BS in industrial management, served as a Naval officer until joining GD in 1961.

Pilot of 456th FIS Logs 1,000 in F-106

B. F. Ferguson, F-102/F-106 project engineer at GD/Convair, was at Castle AFB, Calif., in mid-November to honor the pilot who first piled up 1,000 hours in an F-106.

He presented Capt. E. W. Barnes of the 456th Fighter-Interceptor Squadron with a "Two-Grand Trophy," signifying the pilot's 1,000 hours and the aircraft's own 1,000 hours in the air. Coincidentally, the plane in which Capt. Barnes marked up his 1,000 hrs. was the first F-106 to reach 1,000 hrs. of airframe time.

The trophy was supplied by GD/Convair, builder of F-106s.

GD/FW Engineers Continue Hunt For New High Speed Materials

What will the Mach-busting space ship of tomorrow—operating at speeds of Mach 10 and above—be made of?

A handful of engineers in GD/Fort Worth's structural sciences group tackle this problem daily. And they'll admit the answers are not easy to come by.

"Today's conventional airplane materials, such as steel and aluminum, work all right in temperatures up to several hundred degrees," explained J. E. Burroughs, senior design engineer, "but they can't begin to withstand the high temperatures of of re-entry or hypersonic speeds in the atmosphere."

Accordingly, engineers are exploring the refractory metals—tungsten, molybdenum, tantalum, columbium and various composites—which can take temperatures of 2,500 degrees F. and up. Some refractory metals, for instance, are used in the nose cone and wing leading edges of high-performance planes.

Along with refractory metals, GD/FW engineers are constantly exploring means of coating structures with ablative materials which "peel off" as the vehicle passes through extremely high temperatures.

To do so, they're turning to ceramics—an art which served ancient man's purposes as far back as 1,200 B.C., and promises to serve him even more advantageously in the space age.

"One of our special projects," Burroughs said, "is a double-reverse-corrugated core of columbium, which can withstand temperatures up to 2,500 degrees F.

"Onto this structure we burn a ceramic body, or a foam of alumina, a substance which can take temperatures up to 3,500 degrees F. Then we arc-plasma spray the material with an ablative epoxy coating. This is an organic resin from one-quarter to one-inch thick, depending on the temperatures it will be subjected to."

Burroughs pointed out that without such a coating, even refractory materials would oxidize —literally "go up in smoke"—at temperatures of 5,000 degrees F. and above.

The Air Force is now testing various refractory composites and coatings with a pilotless small-scale hypersonic orbiting vehicle.

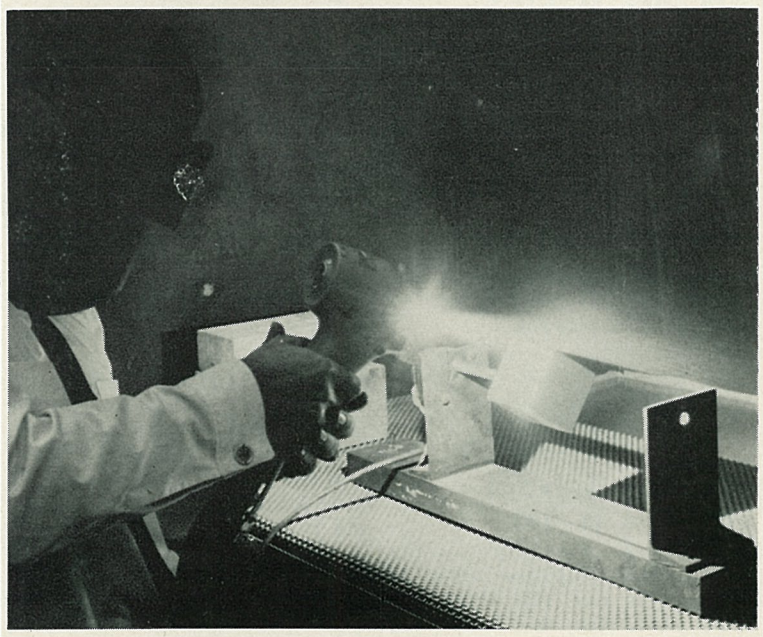
Both industry and government share their experiences with refractory coatings about every nine months through a Refractory Composite Working Group.

Some 90 members of the group started a three-day meeting at GD/Fort Worth yesterday. Representatives were there from a host of firms and institutions, including Air Force Materials Laboratory, National Aeronautics and Space Administration, Naval Ordinance Labs, GD/Fort Worth, Boeing, Battelle Institute, Douglas, GD/Astronautics, GD/Pomona, Illinois Institute of Technology, Lockheed, Lawrence Radiation Laboratory, Martin, Massachusetts Institute of Technology, Ling-Temco-Vought, Picatinny Arsenal, University of Southern California, and Watertown Arsenal.

GD/Astro Men Pass California Bar Exam

Three GD/Astronautics men have been notified they successfully passed the California State Bar Examinations last August.

Olen O. Woods (Dept. 953-2), Jack P. Kelly (Dept. 032-3) and Tom M. Heim (Dept. 512-3) graduated with law degrees from the University of San Diego last June. Each had attended classes in the evening while holding day shift jobs at Astronautics.



HEAT TREATMENT—J. E. Burroughs, senior design engineer, is shown arc-plasma spraying refractory metal on ceramics.

Simple Device Detects Deadly Burning Gases

A simple and effective device which may be one of the first of its kind to help detect the deadly and invisible flames of burning hydrogen gases has been developed within GD/Astronautics optics and lasers group.

G. W. Carmichael, Dept. 592-2 design specialist who was responsible for the flame detector's design emphasized:

"Gaseous hydrogen is particularly dangerous since its flame can not be seen in daylight and a man could walk right into a consuming blaze without realizing it was there.

"With the increasing use of liquid hydrogen, which is used to fuel Astro's Centaur space vehicle, it becomes imperative to have an instrument which will indicate the presence of a hydrogen flame, just as it is now accepted safety practice to use radiation indicators wherever radioactive materials are in use."

The detector's ability to detect a hydrogen flame at practically any distance is based on infrared discrimination techniques, explained Carmichael.

Presence of a hydrogen fire is indicated on a voltage meter at the base of the sensitive device, which in its demonstration version closely resembles a "ray gun." The detector has a wide operating range—even the prototype can easily sense a one-inch hydrogen flame at 100 feet. And, it can be designed to cover an entire hemisphere or a needle-fine field of view.

S. H. Logue, who heads the Astro optics and lasers section, points out that other attempts have been made to sense burning hydrogen, but "this device could prove invaluable during any phase of missile operations where liquid hydrogen is used."

Specifically, some of these areas would be during testing of engines, fueling at missile launching sites, or on actual spacecraft flights.

In fact, a miniaturized missile-borne version of the device now is in the works. It is designed for use within the craft to keep hydrogen handling systems under surveillance or to ride piggy-back on the outer skin to "look" for fires. Information registered on the device would be relayed back to ground control centers over normal telemetering equipment aboard.

Other Astro engineers contributing to the project are D. F. Behrendt, test and evaluation; E. L. Casco, mechanical design and fabrication; L. C. Wilson, head of optical design. The optics and lasers group is a part of Astro's applied research department under Dr. V. A. Babits, manager.

ON THE SLOPES—Pictured at Mammoth (which ARA Ski Club visited over Christmas) are (top photo) Loyal Huddleston, Gerry Foodman, LaVonne Martinez, Connie Varonfakis, Mary Lou Hill, Helen and Gene Rockafeller, Charlie Hill. In lower picture Mary Lou and Connie go up slope via T-bar.

Skiers Enjoy Three Resorts on Holidays

Twenty-seven GD/Astro folk made a "grand tour" of leading ski resorts over the five-day holiday at year-end, during an ARA Snow Ski Club trip which took them to Mammoth, Squaw Valley, Alpine Meadows and back to Mammoth.

The outing followed an earlier weekend trip to Big Bear in which 45 ski enthusiasts took part.

The club has scheduled other trips at modest rates, running into April.

At its meeting Jan. 8, the group sponsored a ski equipment swap session; showed movies made on earlier outings.

San Diego Quality Society to Convene

American Society for Quality Control, San Diego section, will host a two-day program at Ocean-House, Jan. 17 and 18, featuring a presentation on newly revised government quality program requirements.

Comprising a government panel will be representatives of DOD, Air Force, Navy, Army, and Defense Supply Agency. An industry panel on quality management will also make a presentation.

San Diego section officers are all General Dynamics men. M. R. Seldon, GD/Astro, is chairman, L. C. Stuckey, GD/Convair, vice chairman, and L. I. Frederickson and H. H. Mishler, both GD/Astro, are secretary and treasurer, respectively.

Spring Semester Enrollment Opens

Enrollment for spring semester classes at San Diego Junior Colleges began this week and will continue through Jan. 21.

Registration for all students at SD City College, Evening College, or Mesa College will be in the Admissions and Operations Center, 835 12th Ave. from 9 a.m. to 2 p.m. for day students and from 5 to 8 p.m. for evening students.

New students start to enroll Jan. 24. Classes begin Wednesday, Feb. 5.

Garden Clubbers Get Discounts

The joint ARA-CRA Garden Club has completed arrangements with Walter Anderson's Nursery, 3860 Rosecrans, for General Dynamics employees to purchase rose plants at 25 per cent discount.

Eligible are all employees of GD/Astro, GD/Convair, GD/E, General Atomic and Liquid Carbonic. Purchasers need not belong to Garden Club.

The nursery handles only top quality plants, trimmed and ready for planting, and full instructions on planting will be provided at the time of purchase.

Special order forms and price lists are available from employee services outlets at GD/E, GD/Convair and GD/Astro. Use of these forms is preferred, although employees may receive the discount simply by presenting General Dynamics identification at the nursery.

Additional information is available from ARA Commissioner Everett Henderson, GD/Astro ext. 2236.

Disability Tax Bite Will Rise in 1964

General Dynamics people in California will find a larger bite taken out of their salaries this year with the increase of the wage base for contributions to disability insurance.

Tax rate on employees' wages remains at one per cent, but it will be deducted from the first $5,100 earned in 1964, instead of the former base of $4,600. Thus, the tax paid for the year will be raised from $46 to $51.

Simultaneously, commencing with Jan. 1, 1964, maximum weekly disability benefits were increased from $75 to $77.

Saturday Salvage Schedule Is Set

Alternating Saturday morning schedule for employee sales at GD/Convair and GD/Astro salvage yards for the next four weeks is:

GD/Convair—Jan. 18, Feb. 1.
GD/Astro—Jan. 25, Feb. 8.

Industry Night Reset, Tickets Put on Sale

"Convair Industry Night" has been rescheduled for Jan. 28 by the sponsoring group, San Diego Section, American Institute of Aeronautics and Astronautics.

The meeting, first in a series spotlighting San Diego industries, originally set for Nov. 22, was cancelled at the death of the late President Kennedy.

The dinner meeting will be at the Torrey Pines Inn, with social hour at 6:30 p.m., dinner at 7:30, and program at 8:30.

GD/Convair President J. H. Famme will discuss the division's present progress and planning for the future. W. W. Fox, director of engineering, will talk on Convair's research and development programs and J. B. Hurt will outline the Little Joe II launch vehicle program.

Chairing the session will be Capt. N. R. Richardson, USN, chairman of the SD Section.

Reservations at $4 a ticket must be made by noon on Jan. 27.

Convair and GD/Electronics people may get tickets from E. E. Patrick or Gordon Glass, at ext. 2384, Plant 1.

Astro contacts are: John Hartsfield, ext. 2006, Bldg. 19, Plant 1; John Kalogeris, ext. 1591, Plant 19; Robert Batten, ext. 2857, Plant 71.

JUNIOR SHOOTING PROGRAM OFFERED

A shooting program for juniors (under 19) is being offered by Astro Rifle Club to provide guidance and training for young rifle fans who are sons or daughters of GD/Astro, GD/Convair or GD/E employees.

A parents' meeting for discussion of the program will be held in ARA Clubhouse (east of GD/Astro main plant) at 7:30 p.m., Jan. 20.

The junior club, known as "Astro Rifleers," is being organized and is affiliated with National Rifle Association. Teams for competition shooting with other area junior groups are being formed, and winners will be eligible to participate in NRA state and national shoots.

Activities are coordinated by Bob Andrews, ARA commissioner, and firing is conducted at CRA's Gillespie Field Range.

GD People Invited To Quality Meeting

M. R. Seldon, assistant to the director of reliability control at GD/Astro, has invited interested General Dynamics folk to attend the Feb. 10 meeting of San Diego section, American Society for Quality Control.

Seldon is section president.

The session will be held in the Don Room, El Cortez Hotel, with social hour at 6 p.m., dinner at 6:30, and business meeting at 8. The subject, "The Finance Organization Views Quality Control Costs," will be handled by panelists from San Diego chapter, National Association of Accountants.

Five In-Plant Courses Offered GD Folk by Convair Begin in Feb.

Registration is open now for five in-plant courses offered by GD/Convair educational services to General Dynamics people at San Diego locations during the spring semester beginning the first week in February.

Four accredited courses in technical writing are scheduled in conjunction with the San Diego Junior Colleges certificate program. Other technical writing courses in the program are available on-campus at SD City College, Russ Blvd.

Classes to be held within Plant 1 in Bldg. 14 are: Intermediate Technical Writing, Mondays, 4:30-7:30 p.m., Classroom 8. Louie Henderson of GD/Convair, instructor. Technical Writing Workshop, Tuesdays, 4:30-7:30 p.m., Classroom 8. Henderson, instructor. English for Technical Writers, Wednesdays, 4:30-7:30 p.m., Classroom 8. Irvin Litchfield of Astro, instructor.

Offered for the first time is Technical Proposal Writing with Marvin Feuerborn of Astro, instructor. It will be taught Tuesdays, 4:30-7:30 p.m., in Classroom 7.

Fifth course is Basic Electricity, Mondays, 4:30-7:30 p.m., Classroom 7. Ken Theilig, Astro, instructor.

All courses will run 18 weeks, through the middle of June.

Registration may be made by calling GD/Convair educational services office, ext. 491, Plant 1.

Forms, available in the educational services location, Bldg. 15, and in Bldg. 5 engineering library, may be filled out and mailed to educational services, said Wayne Turner, coordinator.

GD Men Join Cal Faculty

General Dynamics men at San Diego-located divisions who will be members of the faculty during the spring semester of the University of California Extension include 11 from Astronautics, six from General Atomic, and two from Convair.

They are: Astronautics—Raymond Elliott, design specialist, who will teach a course "Introduction to Electronic Digital Computing Systems." Carl G. Erickson, design specialist, coordinator of Mechanical Engineering Review, with Robert M. Kuhns, assistant project engineer, and Philip J. Swanson, assistant project engineer, instructors. Ernest Hamilton, senior electronics engineer, coordinator of Electrical Engineering Review, with James J. Fithian, electronics group engineer, and Richard K. Walter, GD/Convair design specialist, instructors.

James F. Haskins, staff scientist, "Advanced Engineering Mathematics." Cyril H. Nute, design specialist, "Advanced Engineering Mathematics." Douglas L. Platt, space and weapon system program analyst, "Fundamentals of PERT Planning and Control" and "Advanced PERT." Theodore Rubin, design specialist, "Probability and Statistics." Bruno F. W. Witte, design specialist, "Numerical Methods in Algebraic Problems."

Besides Walter, the other Convair faculty member is Nicholas Van Dorn, design specialist.

General Atomic instructors will be: Morton A. Fineman, research and development staff, "Molecular Beam Chemistry." Tomas E. Firle, research staff. Eugene Haddad, research and development staff, "Nuclear Physics." Jerome Kohl, coordinator of special products, and Lloyd R. Zumwalt, senior research advisor, "Measurement and Use of Radiation and Radioisotopes." James Watson, research and development staff, coordinator of lecture series, "Horizons in Space Biosciences: Exobiology."

Magnuson Is Speaker At Quality Meeting

W. E. Magnuson, chief of publications quality assurance at GD/Astro, discussed quality control of technical data at this week's meeting of San Diego Section, American Society for Quality Control.

Magnuson was a guest speaker at the Jan. 13 session sponsored by Straza Industries. Theme of the program was "Material Control in the Space Race."

'Winter Weekend at Big Bear' Reservations Being Accepted

This year's "Winter Weekend at Big Bear Lake" sponsored by General Dynamics Ice Skating Club is scheduled for Feb. 7, 8 and 9, with reservations now being accepted at GD/Astro, GD/Convair and GD/E employee services outlets.

The club has reserved the entire Wawona Lodge at Big Bear for the event, offering rooms with bath for 2, 3, 4 and 5 persons, and 18 cabins for groups of 3 to 12.

Two ranch-style breakfasts and one dinner will be catered by Gil Hutter, manager of Prophet Co. cafeteria at GD/Astro, who will also serve the club's traditional Saturday night pizza snack.

Activities will include skating, skiing, winter sports and a Saturday night dance.

Total cost of the trip is $12 per person, including two nights' lodging and three meals. Children under 8 are charged half price. Participants will be asked to provide their own transportation.

"Drivers are cautioned to bring tire chains and emergency equipment," cautioned Bud Davies, commissioner.

The event is limited to 100 persons, and early reservations are advisable. All arrangements must be firm by Jan. 31. More information is available from Davies, or Barbara Gilliland, GD/Astro ext. 4041.

ARA Hi-Fi/Music Club Planning Swap Night

ARA Hi-Fi/Music Club will conduct another of its popular "swap meets" in ARA Clubhouse at 7:30 p.m., Jan. 22, with all GD/Astro employees invited to take part in buying, selling or swapping hi-fi and electronic gear.

At a club meeting Jan. 14, Neil Kline demonstrated procedures for aligning FM tuners and multiplex adapters, using the club's full line of test equipment.

Employees interested in electronics have been invited to visit the club's new workshop in ARA Clubhouse.

Organ Club Offers Group Instruction

ARA Organ Club will meet in ARA Clubhouse at 7:30 p.m., Jan. 21, and is open to all GD/Astro employees and members of their families.

The club meets regularly on the first and third Tuesday of each month, and is currently arranging for members to receive group instruction at reduced rates.

Information on the lessons is available from ARA Headquarters, ext. 1111.

Drama Club Seeking Help on Stage Sets

Astro Players, ARA drama club, has issued a call for "anyone who can swing a hammer" to help with construction parties held each Saturday on the stage in ARA Clubhouse.

Sets for the group's next play —John Patrick's "Curious Savage" starring Lillie Mae Barr and opening in March—are now in early assembly stages. Work normally starts about 9 a.m., continues until mid-afternoon.

Newton Grant Earns Chess Champ Title

Newton Grant has been named GD/Astro's 1963 chess champion after defeating Art Werbner in a hotly contested final round of ARA Chess Club's annual tournament recently completed in ARA Clubhouse.

Both are in Dept. 958.

Stewart Daniels, Dept. 158, placed third in final standings, with ARA Commissioner Jack Horning, Dept. 756, in fourth spot.

Save Materials—Don't Throw Your Job Away

ROLL OUT—As completion nears, A. A. Kovschak (in cockpit) shows off home-built biplane to W. C. Taylor who will test fly it. Plane is third built by Kovschak. He uses garage as assembly "plant." Both men are in GD/Astro Dept. 972.

20-Foot Span

Garage-Built Biplane to Cruise At 160 mph, Have 20,000 Ceiling

A. A. Kovschak has not only built an airplane in his garage; he also talked his "boss" in GD/Astronautics' Dept. 972-0 into signing on as test pilot for the home-built craft.

"Little K," as Kovschak calls his plane, is scheduled to take its first hop in February, with W. C. "Bill" Taylor, veteran flier and former professional flight instructor, at the controls.

The ship is presently in final stages of construction and is FAA-registered. It is a two-place biplane with 20-foot wing span and is powered with a 125 hp Lycoming engine.

Construction features include a frame of chrome alloy tubing, spruce spars and ribs, and Irish linen covering. All work—design, layout (on his garage floor), welding, wood working, etc.—has been done by Kovschak over the past two and one-half years.

(A one-year Atlas base activation assignment during the period didn't interfere. The plane went to New York with the Kovschaks and work continued!)

The airplane builder is no novice. He's been "plane crazy" since 1940 and joined General Dynamics at GD/Convair in 1951 to work on such projects as the 340 Convair-Liner, the R3Y, and the F-102 and F-106. Transferred to GD/Astro, he now works in mock-up for the liquid-hydrogen powered Centaur space vehicle.

Nor is "Little K" Kovschak's first attempt at private plane building. Two other craft previously rolled from his home workshop "assembly line." Both of these were sold, but the "do-it-yourselfer" plans to keep "Little K" for his own sport use.

He hopes the plane will turn in a 160 mph cruising speed, and red-line at 295 in a dive. Ceiling is expected to be in the neighborhood of 20,000 feet.

Ingenuity? Kovschak kept watch on the plane's center of gravity during construction by resting wheels and tail on three bathroom scales!

ARA Calendar

(GD/Astronautics Recreation Association has some 40 activities in operation for employees. For information, call ARA Headquarters, ext. 1111.)

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ASTRO LENS — Meets 7:30 p.m., Jan. 19, Photo Arts Bldg., Balboa Park.

CHESS — Plays Thursdays, 7:30 p.m., ARA Clubhouse.

FIFE & DRUM CORPS—Meets Wednesdays, 7:30 p.m., ARA picnic pavilion.

GOLF CLUB — Tournament Jan. 18-19, new San Luis Rey course on Rt. 76 at Bonsall, between Hwys. 101 and 395. Club memberships for 1964, $2 at employee services.

HI-FI/MUSIC — Swap session, 7:30 p.m., Jan. 22, ARA Clubhouse.

ICE SKATING — Weekend at Big Bear Lake, Feb. 7-9. Reservations at employee services outlets, $12 per person. Deadline Jan. 31.

ORGAN CLUB — Meets 7:30 p.m., Jan. 21, ARA Clubhouse.

RADIO CLUB — Meets 7:30 p.m., Jan. 22, club station, ARA Clubhouse.

RIFLE — Meeting for parents of potential members of junior rifle club, 7:30 p.m., Jan. 20, ARA Clubhouse.

SAILING CLUB — Meets 7:30 p.m., Jan. 22, ARA Clubhouse.

TEEN CLUB — Dance, 7:30-11 p.m., Jan. 18, ARA Clubhouse. "The Valiants" band. Admission 25 cents per person. One guest per member.

Teen Club to Open Members Campaign

With its next dance, 7:30 to 11 p.m., Jan. 18 in ARA Clubhouse, ARA Teen Club will open a campaign for new members.

"The Valiants" band will play for this affair, and each member may bring one guest. Admission is 25 cents per person.

ARA Commissioner John Hess noted that many eligible teenagers (Astro sons or daughters, age 14 to 19) have not taken advantage of club membership and urged them to do so.

Parents may obtain Teen Club membership applications at employee services outlets, or at club dances, the first and third Saturday of each month.

Dress for the Jan. 18 event is casual school clothes, although the group sometimes holds "dressy" dances on special occasions. "Live" music is standard at all events, and admission fees are nominal.

Hess also pointed out the need for adult volunteers to serve as chaperones during the year. Interested adults may contact him at 469-6498, evenings.

Fife and Drum Corps Meeting Wednesdays

ARA's newly-formed Fife and Drum Corps has elected officers with James Churchyard heading the slate as president. Vice president is Ralph Kalal; secretary, Kay O'Brien; treasurer, Eddie Hartdorn.

The group meets each Wednesday, 7:30 p.m., in ARA picnic pavilion, and offers instruction to employees or dependents wishing to participate.

"The fife is easy to learn, particularly if the student can already read a little music," said Churchyard. He added that instruments can be purchased at most music stores for about $3, and that the club text, "Drummer's Heritage" (Fennell) is also readily available.

GD Communicators Will Confer Today

Communications specialists from Western General Dynamics divisions will meet today, Jan. 15, for a one-day exchange of ideas at Vacation Village, San Diego.

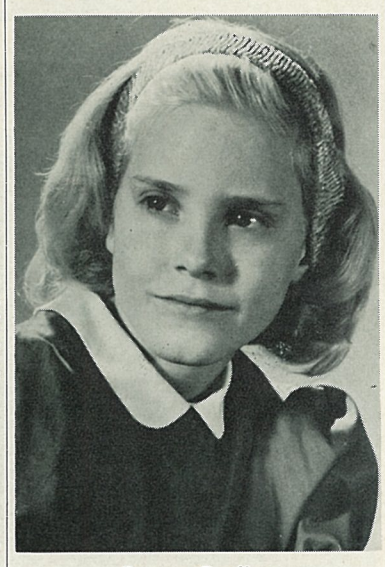
Pacific Telephone and American Telephone and Telegraph are sponsoring the gathering. Representatives from General Dynamics/Pomona, Astronautics, Convair, Electronics-SD, General Atomic, and Fort Worth have been invited.

GD Daughter, Age 9, Playing On Broadway

A December episode of the critically-acclaimed TV drama, "East Side/West Side," revolved around a withdrawn child — a special youngster with a special interest for GD/Astronautics' W. D. "Bill" Taylor, design specialist in Dept. 654-2.

The child star who filled the difficult role is his daughter.

Renee Dudley, as the theater knows the nine-year-old, is "not the least withdrawn" in real life, Taylor said. After shooting the TV script last summer, she landed a prize role in "110° in the Shade," still doing a brisk business on Broadway after opening last October.



Renee Dudley

As her mother is a New York opera company performer, it was natural that Renee's introduction to theater came through music. Voice lessons led to her participation in a number of off-Broadway productions, including a Children's Opera presentation of "Hansel and Gretel" in Carnegie Hall during the 1962 Christmas season.

Her subsequent credits include several TV commercials, industrial and educational films.

Since opening in "110° in the Shade," Renee has continued her education with a special school for professional children, fitting classes around her matinees and daily evening performances.

"She's no theater brat," her father said. "She takes acting seriously—not herself."

Both Renee and her brother, Rick, 16, studied at New York Academy of Theatrical Arts, where Rick, too, has shown considerable promise as an actor.

Taylor remarked, wryly: "What Rick really wants is to be a cowboy."

"Big brother" Bill, 19, who rounds out the talented family, is better situated geographically for that pursuit. He's studying engineering at University of Wyoming.

Bob Young's 80 Low in Tourney

Bob Young, Dept. 191, was low gross winner with an 80 in the annual GD/Astro controller's golf tournament played at Stardust Country Club Dec. 23.

He was trailed by J. W. Perry, Dept. 954 with 83; Jim Clabaugh, Dept. 194 at 84; and R. M. Williams, Dept. 363 at 85.

In net category, Sam Donaldson, Dept. 954, led with 71, followed by Bob Stevens, Dept. 194 at 72, Pat Patton, Dept. 642 at 73, and C. N. Crocker, Dept. 191 at 73½.

Women's low gross trophy went to Arline Talmadge, Dept. 193, for 104, while Sue Lowitz, Dept. 191, took low net with 75.

Centaur financial control, Dept. 954, won the department trophy, with J. W. Parry, Donaldson and Bill Bennett as team members.

Clabaugh took longest drive award, and consolation prizes went to Delores Cochrane and Verna Hathaway, both Dept. 191.

Air Force C-141 Starlifter Scores Success In Maiden Flight Last Month From Dobbins AFB

Maiden flight of the Air Force C-141 Starlifter, for which General Dynamics/Convair is building tail sections, Dec. 17 from Dobbins Air Force Base in Georgia, was an unqualified success, according to reports from Lockheed Aircraft Corp., prime contractor.

The giant jet cargo plane roared from Dobbins AFB runway at 12:45 p.m. (EST). Takeoff run was 2,500 feet. Fifty-five minutes later, at 1:40 p.m., the C-141 made a perfect landing.

The Lockheed test crew, headed by Leo Sullivan, chief engineering test pilot at the controls, who manned the plane, said that the Starlifter performed like planes with several flights' experience.

"It exceeded our expectations," Sullivan said. "Everything was fine."

Col. Max Hammond, AF C-141 Systems Program Office Director; W. A. Pulver, president of Lockheed-Georgia Co., and C. S. Wagner, Lockheed-Georgia vice president in charge of C-141 program, were elated over the Starlifter's performance. All paid tribute to the Air Force, FAA, Lockheed, and subcontractors who participated in development of the plane.

GD/Convair President J. H. Famme wired Lockheed-Georgia his congratulations:

"I wish to extend to you my sincerest congratulations on your outstanding achievement today. A program of the magnitude of the C-141, planned four years ago and meeting its first flight date precisely as proposed, is indeed a fine accomplishment. All of us in Convair wish you continued success."

And, in turn, received the following message from H. Lee Poore, Lockheed-Georgia's C-141 manufacturing manager: "That big tail looked real excellent at 12:45 p.m., our takeoff time with a successful 55-minute flight. Congratulations to you and all of the folks!"

GD/Convair is building C-141 horizontal and vertical stabilizers under a contract for 134 empennages.

The first flight date was well ahead of the Dec. 31, 1963, deadline set two-and-a-half years ago by AF Systems Command's Aeronautical Systems Division, Wright-Patterson AFB, Ohio.

The Starlifter is the first aircraft designed for both military and civilian use and the first ever procured under Air Force-Federal Aviation Agency coordination.

MERCURY FLIGHT REPORT DRAFTED

GD/Astronautics' SLV test evaluation group this month is putting the finishing touches on a unique report titled "Mercury Booster Flight Test Summary Report."

Scheduled publication date is Jan. 22.

Requested by the Air Force System Command's Space Systems Division, the report contains pertinent and significant summary analyses pertaining to each of the 10 Project Mercury flights. The report contains historical as well as technical information on each flight.

Copies will be forwarded to key Air Force units, libraries, etc.

Marshall Conover, flight test lead engineer (Dept. 684-5), is in charge of preparing the report, assisted by Jean P. Augusta, engineering writer, and Sadie Farewell, publication aide.

Bridge Players Enter Jan. 17 Championship

Members of ARA Bridge Club have been urged to compete in the ACBL Southland sectional championships to be played Jan. 17-19 in San Diego Hotel, and in consequence no club meeting will be held Jan. 17.

Regular Friday evening play sessions will resume Jan. 24, and a special master point will be awarded at the Jan. 31 meet.

Lucille Donan and Tony Miller began the year the "right" way by winning north-south honors, Section A, in club play Jan. 3. East-west winners were Pauline Blough and Mrs. C. R. McCullough.

In Section B, Dave Swingle and Jim Hanratty were N-S winners, with Mr. and Mrs. Ralph Emerson, E-W.

On Dec. 28, some 90 members attended the club dinner party at Kona Kai Club. Thirty door prizes were distributed.

Bowlers Qualifying For National Meet

Final qualifying rounds for Astro Management Club's singles bowling classic at Mission Valley Bowlero will be held this weekend (Jan. 18-19).

Keglers holding ABC and NMA memberships may enter up until squad times (each day at 1:30 and 3:30 p.m.). One out of every 10 bowlers this weekend and the weekend just past will qualify for finals at 2:30 p.m. Jan. 26-27.

The top five finalists will represent the club at a National Management Association classic to be held May 9-10 in Detroit.

The top 20 finalists will compete in a Zone "A" NMA tournament to be held prior to May in the Los Angeles area.

Apollo Candidate Gets Scout Award

When a future Project Apollo astronaut appeared in San Diego recently for a special award, he shared honors with a GD/Astronautics man who had helped make them possible.

Capt. William Anders, USAF, was honored as the first Boy Scout from San Diego County to be accepted for astronaut training. He received a Scout statuette.

C. J. Kruk, Astro equipment engineer (Dept. 250-2) was on hand to beam his approval. In 1944-45-46 Kruk had served as Capt. Anders' scoutmaster in the La Mesa Congregational Church Troop 77.

DYNAMICS PRODUCTS TO GO ON DISPLAY

General Dynamics aircraft and missiles used by the North American Air Defense Command figure among displays open to the public this week during San Diego's "Aerospace Defense Week."

Convair-built F-102 and F-106 interceptors; Terrier and Tartar guided missiles built by Pomona division; aerospace products of Astronautics; and, probably, a nuclear-powered submarine, built by Electric Boat, are scheduled for exhibit.

Indoor exhibits are housed in the Aerospace Museum on Balboa Park's Zoo Drive, with full-size aircraft and missiles located on the parking lot next to the Zoo. Submarines, if open to public tours, will be in San Diego Harbor. Displays may be seen all week from 10 a.m. to 4:30 p.m.

San Diego Junior Chamber of Commerce is sponsoring the Jan. 12-19 aerospace observance.

CRAFTSMANSHIP

DO GOOD WORK

THREE FOR THREE—Pictured here are GD/Astro crews and supporting personnel involved in highly successful triple Atlas launching Dec. 18. In top photo are those responsible for launching Atlas 109-F at Vandenberg AFB, last of F-series Category II. In lower picture are those who launched Atlas 227-D from Pt. Arguello Launch Complex II. This Atlas, a SLV, carried Agena stage aloft.

'Tripleheader' Launch Draws Praise to Atlas

VANDENBERG AFB — Praise for the role GD/Astronautics and its employees played in the Atlas "tripleheader" launch Dec. 18 continues to arrive. Most point up one or more of the unusual aspects of this feat.

For instance, the fact the event marked the first time three vehicles of the same type had been launched in a single day. This includes not only the entire seven-year history of Atlas flights, but also all major aerospace missile and rocket programs.

Too, there is the record that each of the three Atlas launches was on a different mission and each was a complete success. Two launches were of the Atlas Weapons System vehicles, one of the Atlas Space Launch Vehicle type.

They were the 197th, 198th and 199th launches in the Atlas program. They were also the 86th, 87th and 88th Atlas launches from this base and made the 1963 launch record stand at 36 (compared to 31 in 1962).

Astro President J. R. Dempsey called the "three-for-three" accomplishment "a fine achievement for the Air Force and General Dynamics/Astronautics. My congratulations to all involved for an outstanding job."

Col. R. C. Thompson, deputy for Atlas at Ballistic Systems Division, wired that the Atlas System Program Office (BSD) "extends its congratulations and appreciation to all members of the Atlas team and those test support agencies whose dedication, skill and energy contributed to the successful launch of Atlas 109F." He pointed out this was the final series "F" Category II launch and marked the completion of this phase of testing.

"The SPO is certain that your continued interest, cooperation and supporting effort will enable timely and effective resolution during the Category III and ABRES programs. Once again—to all hands—a sincere well done," he added.

While the three launches were recognized as occurring in a single day, Astro's Pacific Missile Range operations personnel here prefer to call it a half-day. That is, only 12 hours and 45 minutes lapsed between the first and third launches!

Atlas 233D, launched from VAFB Launch Complex 4300-A (formerly 576-A), led the way at 2:15 a.m. It carried aloft an ABRES re-entry vehicle and was an AWS "bird." A. H. "Arnie" Hoines was launch operations manager, while Val D. Wynn was site manager for Astro.

Atlas 227D, launched from PALC II, followed at 12:53 p.m. It was an Atlas-Agena configuration and an SLV "bird." C. A. "Curt" Johnston is manager for SLV, while F. M. "Maurie" Anderson is site manager for Astro.

The Atlas 109F launch from OSTF-II at 2:40 p.m. concluded the "show." Under Hoines for this launch were Jim Copeland, site manager, and Alex Mau, assistant site manager.

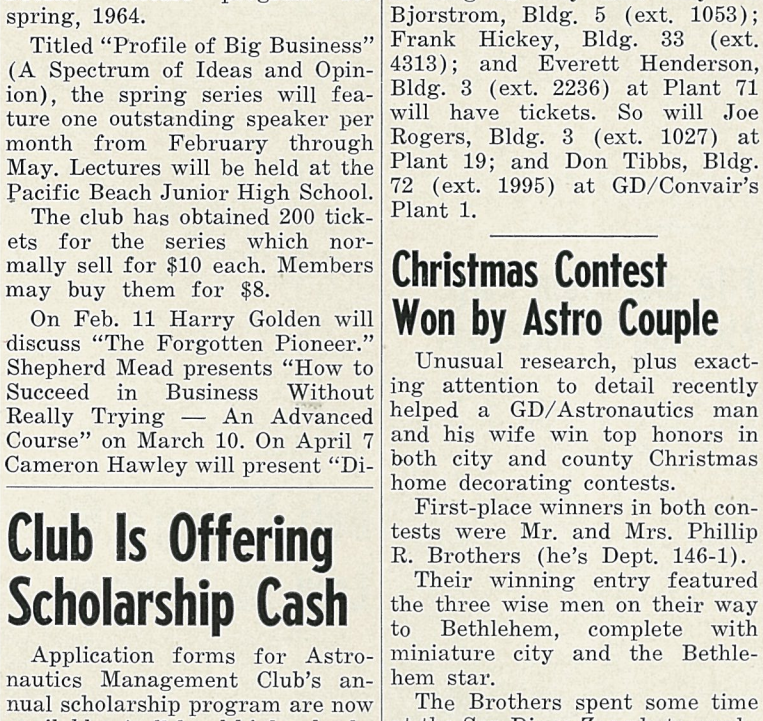
Con-Trib Campaign At Altus a Success

ALTUS AFB — GD/Astronautics employees here reported one of the most successful Con-Trib-Club membership drives possible, achieving 98 per cent participation.

Eugene Sumner, drive chairman, reported 149 of 152 employees elected to join. Six of eight departments were 100 per cent.

Handling the drive was a Con-Trib Advisory Committee made up of Sumner (representing industrial relations), F. F. Campbell and Kenneth Barnes (representing I.A.M.), H. E. Hamerdinger (representing salaried employees) and D. M. Brownell (representing supervision).

THE DIFFERENCE—When Vandenberg AFB United Fund campaign bogged down short of its $100,000 goal, Astro Con-Trib-Club members came to rescue, adding $3,000 to their initial $10,000 pledge. Astro's Robert Ihrig, left, Donald L. Fagan, director of PMR operations, and Audrey Winter, Con-Trib secretary, pass on check to Col. Verl B. Schoenfeldt, base commander. Astro folk in this area have contributed more than $100,000 in past five years to welfare and health agencies.



STARTER—This GD/Astro crew launched Atlas 233-D from Vandenberg AFB at 2:15 a.m. Dec. 18, starting triple launch sequence. Atlas 227-D followed at 12:53 p.m. and Atlas 109-F went up at 2:40 p.m.

Management Club to Subsidize 'Executive Profile' Ticket Fees

Astronautics Management Club will subsidize a limited number of tickets for members wishing to take part in the University of California Extension's "Executive Profile" lecture program for spring, 1964.

Titled "Profile of Big Business" (A Spectrum of Ideas and Opinion), the spring series will feature one outstanding speaker per month from February through May. Lectures will be held at the Pacific Beach Junior High School.

The club has obtained 200 tickets for the series which normally sell for $10 each. Members may buy them for $8.

On Feb. 11 Harry Golden will discuss "The Forgotten Pioneer." Shepherd Mead presents "How to Succeed in Business Without Really Trying — An Advanced Course" on March 10. On April 7 Cameron Hawley will present "Dilemma at the Top." J. Paul Getty concludes the series with "Gallant Insights and Blunders" on May 5.

Five Management Club Boosters will sell tickets for the series, as long as they last. Maynard Bjorstrom, Bldg. 5 (ext. 1053); Frank Hickey, Bldg. 33 (ext. 4313); and Everett Henderson, Bldg. 3 (ext. 2236) at Plant 71 will have tickets. So will Joe Rogers, Bldg. 3 (ext. 1027) at Plant 19; and Don Tibbs, Bldg. 72 (ext. 1995) at GD/Convair's Plant 1.

Club Is Offering Scholarship Cash

Application forms for Astronautics Management Club's annual scholarship program are now available at all local high schools. They must be submitted by Feb. 21.

Awards totaling $1,400 will be given including $800 for first, $400 for second and $100 each for third and fourth.

Sons and daughters, by birth or adoption, of Astro employees with one full year of service with any General Dynamics division who are on the payroll Jan. 6 are eligible. They must be graduating from high school during 1964.

Four winners in 1963 are now enrolled in college. They include Stephen Van Tuyl at Stanford, Linda Litchfield at Occidental, Craig Hendrickson at Air Force Academy, and Keith Hill at California Institute of Technology.

Dr. A. N. Wilson is scholarship committee chairman this year.

Christmas Contest Won by Astro Couple

Unusual research, plus exacting attention to detail recently helped a GD/Astronautics man and his wife win top honors in both city and county Christmas home decorating contests.

First-place winners in both contests were Mr. and Mrs. Phillip R. Brothers (he's Dept. 146-1).

Their winning entry featured the three wise men on their way to Bethlehem, complete with miniature city and the Bethlehem star.

The Brothers spent some time at the San Diego Zoo photographing camels (which the wise men rode). They then cut out wooden figures, covered them with wire mesh and finally life-like plaster. The entire scene was done in exacting one-third scale and was backlighted for a three dimensional effect.

Jerry Wilson Wins Sail Club Regatta

Winners of ARA Sailing Club's first "Turkey Day Regatta" were Jerry Wilson, Charlie McLean and Bob Myhre, who crossed the finish line in that order.

Next club meeting is slated for 7:30 p.m., Jan. 22 in ARA Clubhouse. Nomination of club officers will be held, with elections at the February meeting.

City College Class Schedule Announced

Spring semester San Diego City College classes to be offered at GD/Astronautics following normal work hours have been announced.

Classes begin the week of Feb. 3. Information concerning registration, fees and enrollment may be obtained through Laura, ext. 1935. All classes are taught by qualified Astro instructors and carry City College credit.

Monday classes include Math 17A (4:30-7:30 p.m.) and Business Management I (5-8 p.m.), while Electronics 46 (4:30-7 p.m.) will meet on Monday and Wednesday.

A Tuesday-Thursday (4:30-7 p.m.) session will be Electronics 45.

Quality Control I and Technical Writing I will be offered on Wednesday, both from 5 to 8 p.m.

Math 17B meets from 4:30 to 7:30 p.m. on Thursday.

Diver Captures 13-lb. Lobster

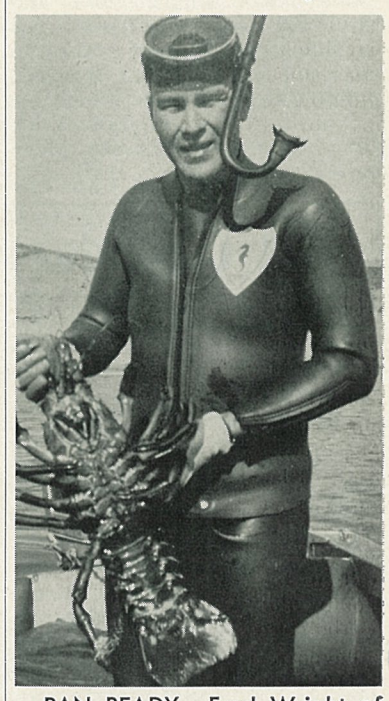
VANDENBERG AFB — "Bug pickers" (skin divers who seek lobsters), like fishermen, dream of a catch so big they needn't stretch the truth in telling of it later.

Fred Wright of Astronautic's PMR operations here recently bagged one.

Skin diving off the Point Conception lighthouse between Santa Barbara and Vandenberg AFB, he spotted a real "granddaddy" under a rock about 25 feet down. It weighed 13 pounds!

"One antenna was broken in the fight and he was too big for my lobster sack," Wright said. "So I just held on and swam to shore."

Gene Sims, also of Astro, snapped his picture. Both Wright and Sims are members of the Ichthyoids, a skin diving club here. Both urge other Astro employees to join in their club activities, although those interested in lobster must hurry—the season closes in mid-February.



PAN READY—Fred Wright of Astro's Vandenberg AFB operations shows off 13-pound lobster he wrestled up from 25 feet of water off Point Conception. Big "bug" is one of largest known taken from these waters recently. Wright was diving with Gene Sims, also Astro.

ARA Explorers Club To Visit Ghost Town

Members of ARA Explorers Club will head east early Saturday (Jan. 18) for a two-day field trip to Tumco ghost town, former gold mining site near the Arizona border.

Paul DuPre, club president, said Tumco was once a thriving mining community of over 3,000 persons. Now village and mines alike are deserted.

Other ghost towns in the Southern California area head Explorers Club's agenda of field trip sites for the coming year.

GD
ASTRONAUTICS EDITION

GENERAL DYNAMICS NEWS

Vol. 17, No. 3 | PUBLISHED BY GENERAL DYNAMICS CORPORATION | Wednesday, January 29, 1964

Dynamics Is Pledged To 'Thrift, Frugality'

Full cooperation with President Johnson's program of "thrift and frugality . . . to get a dollar's value for every dollar spent" has been pledged by General Dynamics Corporation's president, Roger Lewis. All divisions have been instructed to re-examine existing Cost Reduction Programs to assure maximum effort.

Lewis' action was in response to a personal letter from the White House in which General Dynamics was asked to assist in achieving "significant reductions in defense expenditures." Similar letters went to all major defense contractors. Also received by President Lewis were personal letters from Defense Secretary McNamara and NASA Administrator Webb elaborating on steps recommended for greater economy in defense operations.

(For texts of key letters, see columns 1 and 2 on this page and columns 1 and 2 on page 3.)

Coincident with acknowledgement of the Washington requests, Lewis sent copies of the correspondence to all division managers and instructed them to establish goals for reducing costs and improving efficiency, using 1963 performance as a base to measure progress. (For text see columns 4 and 5.)

He reminded division heads that "It is General Dynamics policy to deliver the best possible product in the shortest possible time at the lowest possible cost" and pointed out that personal leadership is essential.

President Lewis' reply to Secretary McNamara reported his instructions to all Dynamics divisions and added: "I can assure you that cost efficiency, along with product integrity, are paramount in each of our undertakings."

His reply to NASA Administrator Webb repeated Dynamics' emphasis upon product integrity, cost efficiency and schedule integrity and included a report on significant steps that General Dynamics divisions have taken in this direction.

"We propose to further improve and intensify our effort in this area during the coming months . . . to assure both ourselves and NASA that the country's space program is truly receiving full value for every dollar," he added.

THE WHITE HOUSE
WASHINGTON

December 2, 1963

Dear Mr. Lewis:

In addressing the Congress last week, I pledged my Administration to the utmost of thrift and frugality, and to get a dollar's value for every dollar spent.

I have directed the heads of all government agencies to accelerate immediately their efforts to operate their programs at the lowest possible cost. The Secretary of Defense has already established a cost reduction program aimed at achieving annual savings of $4 billion, through efforts now in process or planned by Fiscal Year 1967, and he has further committed his Department to realizing $1.5 billion of these savings in the current fiscal year. More than 55¢ out of each Defense dollar is spent by its contractors. It is for this reason that I am calling on you personally to assist me and the Secretary in achieving further significant reductions in Defense expenditures.

It is my desire that you establish an affirmative program of cost reduction in the performance of Defense contracts, both those which you now hold and those which you may subsequently receive. If you already have such a program in being, then I call on you to accelerate, expand, and intensify this effort.

I have asked the Secretary of Defense to take into account the accomplishments of contractors who successfully reduce the cost of Defense procurement, when making future source selections, and in determining profit and fee rates on non-competitive negotiated contracts.

I have also discussed this program with the Director of the Budget and the Comptroller General.

The Secretary of Defense's letter, elaborating this program is enclosed. It has my fullest endorsement.

Sincerely,

Lyndon B. Johnson

THE SECRETARY OF DEFENSE
WASHINGTON

December 2, 1963

Dear Mr. Lewis:

I suggest that you give particular attention to reducing Defense procurement costs by assisting the Defense Department in achieving its three primary cost reduction objectives, which are:

- Buying only what is needed.
- Buying at the lowest sound price.
- Reducing operating costs.

You can assist us in buying only what is needed by critically appraising procurement specifications to identify both qualitative and quantitative requirements in excess of those needed to assure safe and reliable operation of military equipment. Some Defense contractors now have formal value engineering programs, and such contractors have been able to recommend hundreds of ideas to reduce costs of parts, components and end items by as much as 50%. I urge all contractors to stress such critical examinations, and to propose cost savings ideas promptly to Defense officials.

The second major way in which contractors can reduce Defense costs is by taking steps to

(Continued on Page 3)

GENERAL DYNAMICS CORPORATION
ONE ROCKEFELLER PLAZA
NEW YORK 20, NEW YORK

January 6, 1964

The President of the United States
The White House
Washington 25, D. C.
My dear Mr. President:

Your letters of December 2, 1963 and December 11, 1963 in which you strongly urge renewed effort in reducing costs in the performance of defense contracts were most gratifying to receive and are consistent with similar programs being carried out in each of the Divisions of General Dynamics.

As a positive endorsement to your request, each of our operations will thoroughly re-examine its Cost Reduction Programs. I can assure you that cost efficiency, along with product reliability and schedule integrity, are paramount in each of our undertakings.

Sincerely yours,

Roger Lewis
President

To: All Division Managers
From: Roger Lewis

Enclosed are copies of letters from President Johnson, Secretary McNamara and NASA Administrator Webb, together with my replies. We have been advised that DOD and NASA will issue procedures governing the manner in which industry will be requested to respond to this effort. Formal requirements will be forthcoming from this office at that time. In the interim will you thoroughly re-examine your existing Cost Reduction Programs in order to assure yourselves that maximum effort is being expended to accomplish the objectives outlined. . . . You should establish goals for reducing costs and improving efficiency using 1963 actual experience as the base from which to measure your progress.

It is General Dynamics policy to deliver the best possible product in the shortest possible time at the lowest possible cost. Getting the job right the first time and doing it quickly are the biggest challenges and offer big cost reduction potentials.

While a great deal has been done in the past two years, cost reduction is a continuous objective in every segment of our business. All aspects of your operations are therefore involved and your personal leadership essential.

GD Value Engineering Saves $7 Million in '63

In the field of cost reduction, Value Engineering/Value Control efforts alone within General Dynamics divisions resulted in savings of more than $7 million during 1963, a survey revealed this week, and higher goals have been set for 1964.

(The total does not include savings accomplished by other cost reduction systems in the divisions, such as Employee Suggestions and Cost Improvement Proposals, etc., but applies to Value Engineering/Value Control alone.)

Dynamics divisions completed 648 value study projects during the year which resulted in cost reductions of a total of $7,057,000, most of which represented direct savings and lower costs to the customer.

Approximately 750 individuals took part in intensive workshop seminars usually lasting a week or more and an additional 1,500 participated in orientation sessions.

"Return on investment" showed Value Engineering efforts were profitable in all cases. At GD/Astronautics savings of $9.60 were recorded for every dollar expended in the program during

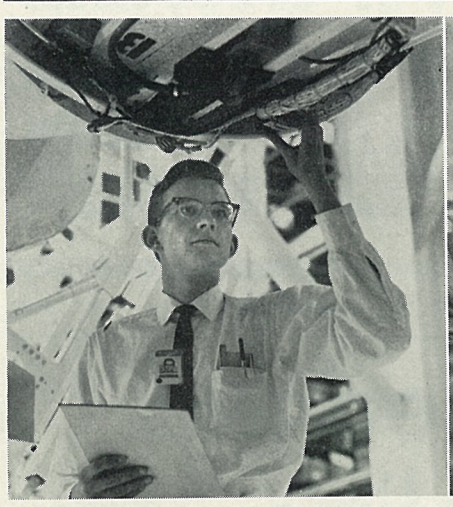
(Continued on Page 3)

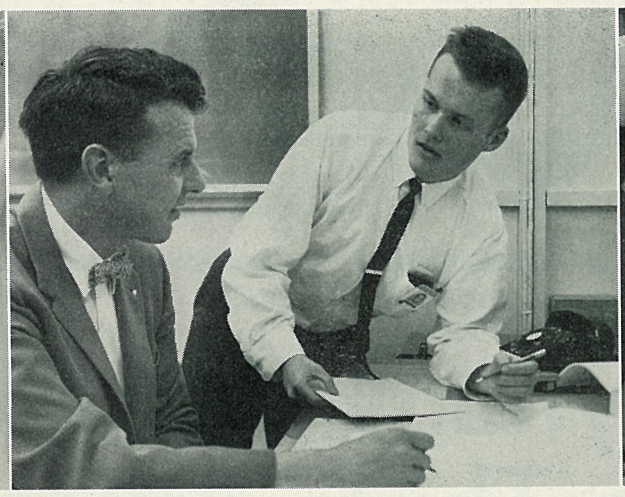
GD/E Radars Displayed During Defense Week

General Dynamics products exhibited during San Diego's Aerospace Defense Week Jan. 12-19 included two developed by GD/Electronics-San Diego.

REINS radar assembly and Terrain Following Radar displays were sent to the San Diego Aerospace Museum for public viewing during the week-long observance.

Other GD-built defense systems included the Convair-built F-102, Pomona guided missiles, Astronautics aerospace products.





ROTATION — In "Co-Op" program at GD/Astronautics students attend college for part of year and work at Astro balance of year, giving them practical experience in their fields as they pursue academic career. At left is George Weisskopf, University of Detroit, with Surveyor mockup. Center: Louis Brock, another student in the program, is shown with Dr. A. H. Hausrath, chief of stress at Astro. At right: George Harbaugh, Co-Op coordinator, David Czarnecky of University of California, and John Tannone, supervisor-technical recruitment in professional placement and personnel.

Astro 'Co-Op' Plan Nearing A Milestone

A "dual benefit" program from which both General Dynamics/Astronautics and 25 college engineering and physics students stand to gain will pass a milestone this June.

At that time, the first graduates (four) in the division's Cooperative Work-Study Program, offered in conjunction with several leading colleges, will receive their bachelor of science degrees in engineering or physics.

For the last five years the June graduates and other participants have divided their time between campus and industry — alternating periods of technical employment at Astro with intensive academic preparation at their respective colleges.

The "Co-Op" program, as it is known, includes at present students from the University of California (Berkeley), Purdue, Drexel and the University of Detroit. Because of the work periods, each student spends five years in the program. Each receives regular pay and enjoys employee benefits, etc., while at Astro.

Still, there is no obligation to join Astro permanently, once the student graduates.

However, gains for the student, Astronautics and the schools involved are obvious.

In addition to earnings which help meet educational costs, students gain a rare insight into the responsibilities of engineers and scientists; learn practical application of theory in an engineering environment; add maturity and skill in human relations; and see first hand the scope of positions available after graduation. The latter, incidentally, has aided many in selecting future courses in line with career interests and opportunities.

Astronautics strengthens already close ties with the colleges; gains when students circulate information about Astro, its programs and methods; and has a chance to observe prospective employees before graduation.

Students accepted in the program are outstanding. Before completing their first college semester, they apply for admission. College "Co-Op" offices and advisers screen applications, then forward a selection to Astro for further screening which leads to offers for only a select few.

Many accepted by Astro are "honors" students.

Once the student reports for work, he is given thorough counseling, then placed in a selected function. He may work in design, test, analytical or research groups. Rotation through various functions during subsequent work periods often occurs with every effort made to place students in their area of interest.

Often, the professional placement and personnel section of industrial relations, headed by R. E. Sutherland, receives requests from technical supervisors for the return of a student to a second work period in their group.

Students experience little trouble making quick adjustments to their work periods, finding, for the most part, quick acceptance and available counsel when needed. They are also offered help in finding living quarters, rides to and from work, etc.

Typical of the outstanding participants in the program is George Weisskopf. He is now in his third work period at Astro and returns soon to the University of Detroit for his fourth academic session. Weisskopf is an "honors" student who made straight "As" in his last class work. (Both Astro and the colleges exchange exacting information on the progress of each student in each phase of the program.)

"My work at Astronautics has been motivating and interesting," Weisskopf said. "I find I am able to pass along a wealth of general knowledge about what work after graduation will be like to others not in the program."

Log Book Entries

Now wearing a 25-year emblem at GD/Astronautics is T. H. Chadwick of Dept. 652-2.

Service Emblems

Service emblems due during the period Jan. 16 through Jan. 31.

Twenty-year: Dept. 558-3, H. B. Eilers; Dept. 756-0, R. T. Bernal; Dept. 961-4, E. A. Lansangan.

Fifteen-year: Dept. 032-4, W. R. Benton Jr.; Dept. 336-3, H. K. Kirkwood; Dept. 382-1, J. B. Jessop; Dept. 673-0, H. M. Clingingsmith; Dept. 756-0, E. J. McInvale; Dept. 831-1, Dorothy A. Oakerson, L. H. Thoulion; Dept. 835-1, Zola B. Cruger; Dept. 960-4, J. A. Nelson; Dept. 961-8, B. R. Hatcher.

Ten-year: Dept. 250-1, J. C. Daniels, J. T. Taylor Jr.; Dept. 387-1, J. A. Rose Jr.; Dept. 526-6, H. S. Mumma; Dept. 557-2, Alfred Hucknall; Dept. 662-7, A. M. Colvin; Dept. 715-0, J. L. Hopkins; Dept. 756-0, E. M. Walton; Dept. 759-0, Alex Bejarano; Dept. 780-4, Frances M. Ogden; Dept. 952-1, Rodney Eschenburg; Dept. 972-0, D. J. Chacon, A. M. Shaw.

FAIRCHILD AFB

Ten-year: Dept. 388-2, Elmer Vorce.

LINCOLN AFB

Fifteen-year: Dept. 389-3, E. A. Thompson.

Ten-year: Dept. 389-3, J. E. Bowker.

VANDENBERG AFB

Ten-year: Dept. 576-4, J. F. Goeb.

Papers Presented

GIROUARD — H. D., Dept. 528-1. "Catalysis of nozzle flows," AIAA/Aerospace Sciences meeting, New York City, Jan. 20-22.

MITCHELL—R. C., Dept. 528-2. "Flame spread on solid propellant," AIAA/Solid Propellant Conference, Palo Alto, Jan. 29-31.

WEINBAUM—B., Dept. 549-8. "Large weapon and space system compatibility considerations," IEEE/Professional Technical Group on Electromagnetic Compatibility, Sunnyvale, Calif., Jan. 23.

Births

BENSON—Daughter, Shauna Lea, 8 lbs., born Jan. 6 to Mr. and Mrs. Eugene H. Benson Jr., Dept. 661-6.

LONG—Son, John William, 5 lbs., 6½ oz., born Jan. 8 to Mr. and Mrs. Robert Long, Dept. 758.

POWELL—Daughter, Lorna Lynn, 8 lbs., 8 oz., born Jan. 20 to Mr. and Mrs. Roy Powell Jr., Dept. 125-1.

ROSEN—Daughter, Randi Sue, 7 lbs., 4 oz., born Dec. 14 to Mr. and Mrs. R. G. Rosen, Dept. 150-0.

Deaths

CORT—Robert B., Dept. 811-1. Died Jan. 17. Survived by wife, Ruth.

DAVIS—James L., Dept. 759-0. Died Jan. 12. Survived by wife, Hazel; daughter.

STEELE—Robert E., chief of off-site quality control, Dept. 148-0. Died Jan. 18. Survived by wife, Betty; son, Thomas; daughters, Katherine and Patricia.

Retirements

MARTIN—Carl C., Dept. 110-0. Seniority date, Feb. 6, 1953. Retired Nov. 19.

SNOW—Frank J., Dept. 451-0. Seniority date, May 11, 1954. Retired Dec. 1.

Personals

ALTUS AFB

My sincere thanks and appreciation for your expressions of sympathy on the death of my father, Charles H. Thatcher. They will always be remembered with deepest gratitude.

Glenn Thatcher
Dept. 391-2

Astro Finishes Mailing W-2s

General Dynamics/Astronautics has completed its annual task of mailing out "W-2" forms to all employees on the payroll at any time during 1963. Forms for employees at all locations were mailed from San Diego.

After a reasonable period (mid-February), employees who have not received these forms at home may contact Astro's financial accounting section, mail zone 191-02, ext. 3889 at Plant 71.

Chances are, forms were not delivered because of incorrect home addresses. All employees are urged to check their regular paychecks (stubs) which list the home address on file at Astro. Incorrect addresses should be reported at once. Equally important are the employees' Social Security numbers. These also should be corrected immediately, if an error is evident.

Employees must use "W-2" forms in filing 1963 federal income tax reports.

Retirement Plan Talks Scheduled

GD/Astronautics salaried employees will be introduced to General Dynamics vastly improved retirement plan at a series of departmental meetings to begin this week.

J. R. Mitchell, chief of employee services, has briefed supervision at management meetings at both Plant 19 and the main plant.

Now departmental sessions are being scheduled by J. A. Croft, chief of educational services, to provide each salaried employee affected with a personal explanation. Supervisors will be notified of meeting times.

BRIDGE EXPANSION WILL EASE TRAFFIC

Nearly every GD/Astronautics employee will be affected, directly or indirectly, by a long-awaited highway construction project now scheduled to get under way this spring.

Involved is expansion of the U. S. 395 interchange with Clairemont Mesa Boulevard, a main access point to the Kearny Mesa main plant.

Construction bids will be opened Feb. 20 for a State Division of Highways project to add a two-lane overhead crossing adjacent to the existing overpass on its south side, and to build connecting lanes to make a full cloverleaf.

Project cost is estimated at $410,000, with the city contributing about $70,000. When completed, the additional overpass lanes may alleviate the congestion which is now a regular morning-evening occurrence on the bridge, and will also simplify access to the plant during non-rush hour periods.

Completion is expected in early 1965.

CITY COLLEGE CLASS COUNSEL AVAILABLE

Registration information on in-plant San Diego City College classes to be offered at GD/Astro beginning the week of Feb. 3 is now available from Laura McGraw, educational services (Dept. 130-3), main plant ext. 1935.

Eight courses in five subjects will be offered after normal working hours in Bldg. 17.

Courses, meeting times and classrooms are: Math 17A (Mondays) and Math 17B (Thursdays), 4:30-7:30 p.m., Room 2; Business Management I, Mondays, 5-8 p.m., Room 3; Electronics 45, Tuesdays and Thursdays, 4:30-7 p.m., Room 9; Electronics 46, Mondays and Wednesdays, 4:30-7 p.m., Room 7.

Quality Control I will meet on Tuesdays, Quality Control II on Wednesdays, both 5-8 p.m., in Room 9, and Technical Writing I on Wednesdays, 5-8 p.m., in Room 1.

All classes carry City College credit and are taught by qualified GD/Astro instructors.

Tax Deduction Amounts Given

GD/Astronautics employees may list amounts deducted from their paychecks for dependents' insurance as a medical deduction in itemizing deductions on 1963 income tax returns.

Following are amounts which may be deducted for each week during different periods of the year:

Non-represented employees, and those represented by IAM, IBEW, UAPP and UWA — Jan. 1 through Sept. 30, $2.19; Oct. 1 through Dec. 31, $2.59.

EAA-represented hourly employees—Jan. 1 through Aug. 18, $3.19; Aug. 19 through Sept. 30, $2.19; Oct. 1 through Dec. 31, $2.59.

EAA-represented salaried employees — Jan. 1 through July 21, $3.19; July 22 through Sept. 30, $2.19; Oct. 1 through Dec. 31, $2.59.

In addition, California employees may deduct one per cent of their first $4,600 in wages which was paid to the State of California for disability insurance. This amount (up to $46) is deductible as a tax on both federal and state income tax returns, and is listed on pay stubs under the "D.I." heading.

R. I. Hagar Elected Co-Sponsor of TAP

Roland I. Hagar of GD/Astro's scientific programming (Dept. 158-1) has been elected the computer programmer co-sponsor of AIA/NP Technical Advisory Project (TAP) for 1964.

The office includes a position on the six-man APT Management Council of the Aerospace Industries Association (AIA) which directs the nationwide APT Long Range Program.

APT is the general purpose digital computer system developed for conversion of engineering and manufacturing data to machine control information for numerically controlled production.

A senior research engineer, Hagar is numerical control group leader at GD/Astro, and is the division's representative to TAP.

GOOD NEIGHBORS—Leroy Langston, left, and Robert Tiffany, holding check at right, receive $2,000 Con-Trib-Club gift from Robert Morris, while D. E. Bolin and Charles Koberg look on. Astro employees at Dyess AFB contributed the amount to the United Fund of Abilene (Texas), helping reach a $360,000 goal.

General Dynamics NEWS

Published by General Dynamics Corporation, One Rockefeller Plaza, New York 20, N. Y.; with editorial headquarters at 3302 Pacific Highway, San Diego 12, Calif., P.O. Box 1950, telephone 296-6611, ext. 1071. Logan Jenkins, editor-in-chief.

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GD/Electronics (San Diego) news contact: Helen Wood, 298-4641, ext. 1377, Plant 1, Bldg. 51.

Fort Worth Editorial Offices, between Cols. 71-C and 71-D, Assbly. Bldg., GD/Fort Worth, Mail Zone T-63, P.O. Box 748, Fort Worth 1, Texas. Telephone PErshing 2-4811, ext. 2961. Staff: Dave Lewis, editor; Mary Beck.

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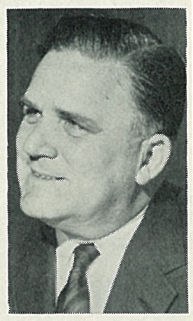
* * *

Affiliated editions of General Dynamics NEWS are published in Rochester, N. Y., covering GD/Electronics and Stromberg-Carlson, editorial offices, 100 Carlson Road, HUbbard 2-2200, ext. 2555. Fred E. Voss, editor; and at Groton, Conn., covering GD/Electric Boat, editorial offices at Groton, HIlltop 5-4321, ext. 300 and 513, Joseph Tracey, editor.

NATIONAL AERONAUTICS AND SPACE ADMINISTRATION
WASHINGTON, D. C. 20546

OFFICE OF THE ADMINISTRATOR



December 11, 1963

Dear Mr. Lewis:

As one of our important contractors, you know that we have instituted an extensive reorganization effective November 1. This realignment of the basic organizational structure and managerial processes of this Agency was part of a continuing program of study and analysis aimed at obtaining the most efficient operation of our program.

While we were preparing these organizational improvements, and recognizing that over 90 percent of our annual appropriations are spent in contracts with industry, we made a concurrent analysis of what steps could be taken with our contractors to obtain cost savings without sacrificing the performance or reliability of flight hardware. This included, among other important actions, a review of the results of the Department of Defense cost reduction program and the careful consideration of its applicability to NASA's research and development programs.

The areas which we feel offer the greatest opportunity for significant savings are as follows:

1. Buying at the lowest sound price compatible with NASA's reliability requirements. NASA has undertaken a major effort to maximize the use of competition on our procurements. Greater attention will be given to this in the future. Inasmuch as you and other NASA prime contractors spend on an average of 42 cents of each contract dollar with subcontractors, we expect your subcontracts to be placed competitively to the fullest possible extent.

2. Placing increased emphasis on incentives. Within the last year, NASA has made extensive and increasing use of incentives in the negotiation of new contracts. Furthermore, we are working with a number of NASA prime contractors to convert existing CPFF contracts to an incentive form. We would suggest that, as a part of your cost reduction program, you explore the possibility of the use of some type of incentive contract on any sizable CPFF subcontracts that you have with your suppliers.

3. Reducing operating costs. Careful analysis should be made of the organizational structure and manpower utilization on each of your major contracts with NASA. In addition, if strong controls are not already in effect, these should be implemented in order to reduce both direct and overhead costs. In the latter area, particular attention should be given to the size and location of burden centers and to the proper distribution of general and administrative expenses. Appropriate parallel action should be taken to streamline procedures and dispense with any unnecessary or marginal activities.

Consistent with the President's recent directive with respect to efficiency and economy within the departments and agencies of the Government, I hereby request that you advise me within the next 30 days as to:

1. The specific steps which you and your principal subcontractors have taken within the past year to achieve full value for every dollar expended on our space program.

2. Proposed steps which you intend taking and the specific targets you intend to set for yourself within the coming calendar year in furtherance of the President's request for thrift and frugality.

3. Any specific steps which you feel that NASA might take which would permit us to achieve the NASA program objectives at a lower overall cost.

In conclusion, I urge that you give this your personal attention. Our studies of past cost reduction efforts, within both industry and Government, clearly show that to be successful such a program must have the complete and emphatic support of top management. Further, we believe accurate and valid documentation of proven savings resulting from the program is necessary to maintain the momentum of the effort and gauge its success. This emphasis on auditable cost reduction must be viewed as an addition to my heavy reliance upon the direct and continuing personal involvement of yourself and your executives in our common goals of effective program and project management. May I count on your wholehearted assistance in this important aspect of our space program?

Sincerely yours,
James E. Webb
Administrator

Value Engineering Effort Saves $7 Million in 1963

(Continued from Page 1)

the year. Canadair estimated that since the inception of the program at Montreal in January, 1962 the rate of return has been five to one.

Stromberg-Carlson also showed a good return, with estimated savings of $163,203 resulting from a $29,660 cost of implementation.

GD/Convair led the divisions in total dollar savings with $2,945,000 and GD/Fort Worth was next with a $1,746,000 figure. GD/Astronautics in the last half of 1963 chalked up $900,000 in savings as a result of the program. GD/Electronics-Rochester reported a saving of $520,000 and GD/Pomona a figure of $375,000, Electric Boat $269,000, Stromberg-Carlson $133,500 and Canadair $94,000 with Electro Dynamic at $75,000.

In number of individuals involved in workshop seminars during the year GD/Fort Worth led the parade with 347, while 670 attended orientation sessions. GD/Pomona ranked next with 169 attending workshops. GD/Convair reported 160 at workshops, 39 customers attending and 45 indoctrinated. At Astronautics 69 attended workshops and 769, orientation sessions.

GD/Electronics-San Diego currently has 100 individuals who have been trained in full-length seminars.

Fort Worth completed the most projects—325—of all divisions, followed by Convair with 200 and Pomona with 58.

Despite a difficult year during which its plant was destroyed by fire, Electro Dynamic continued its value control program, completing four projects for a $75,000 savings.

McNamara (Continued)

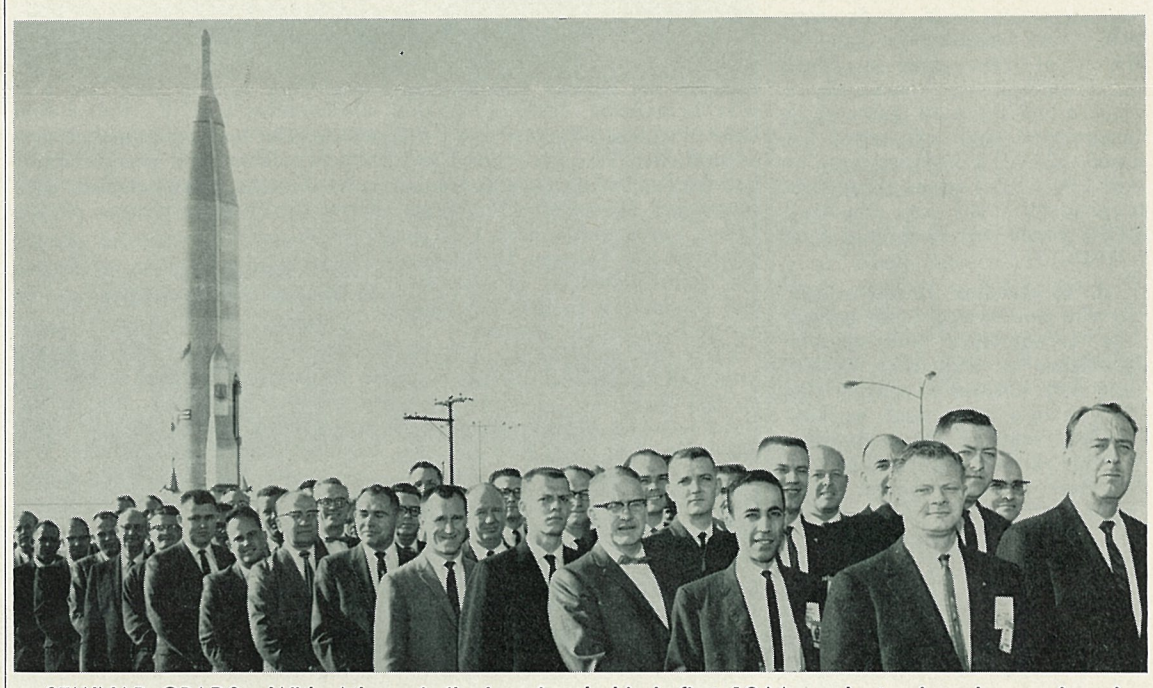
(Continued from Page 1)

assure that their own purchases are made at the lowest sound price. Defense prime contractors spend, on an average, 50¢ of each contract dollar with subcontractors. To the fullest possible extent, such subcontracts should be placed competitively in order to stimulate the full play of the free enterprise system. It is the experience of the Defense Department that for every dollar shifted from non-competitive to competitive procurement, 25¢ or more can be saved from the price. In placing subcontracts, fixed price and incentive contracts should be employed wherever possible, in order to provide the maximum incentive to subcontractors.

Thirdly, Defense contractors can reduce the over-all cost of government by assuring that their own internal operations are conducted in the most economical manner. Effective manpower utilization programs to increase productivity; strong budgetary controls to reduce both direct and overhead costs; simplification of procedures; and elimination of unnecessary activities—are all matters with which I know you are constantly concerned. Wherever unreasonable government requirements are contributing to excess costs, I invite you to call these matters promptly to the attention of the proper government offices.

In conclusion, I urge that you give to these and other cost reduction ideas which I know will occur to you your immediate personal attention and that you join with me in achieving full value for every dollar spent in support of our national defense.

Sincerely,
Robert S. McNamara



SEMINAR GRADS—With Atlas missile looming behind, first 1964 graduates in value engineering seminar at GD/Astronautics pose for class picture. They are typical of over 750 who took part in cost-reducing workshops throughout General Dynamics divisions in 1963.

Suggestions, CIPs For Convair Alone Bring Savings of $650,000 in '63

Employee Suggestions and Cost Improvement Proposals saved GD/Convair over $650,000 during the last year, with nearly an equal amount set as the target for 1964.

All division departments have been assigned individual amounts to aim at throughout the current year to make a grand total of $641,500 savings.

Department heads have been notified of the established savings expected through ESs and CIPs and will be informed each quarter of the departments' progress, said Vic Janusz, supervisor of facilities control and cost reduction.

The $653,171 savings credited to approved ESs and CIPs during 1963 was within 89 per cent of the $733,000 goal.

Several departments went over their targets by several times. Dept. 91 (accounting) parlayed its savings to 1,357 per cent of its assigned goal! Its target was $15,000. Savings achieved through CIPs was $203,506.

Dept. 101 (sheet metal) stole the show in the production departments' race. Ingenious ideas submitted through ESs and CIPs shot total savings to $154,858 — more than four times the $35,000 target figure.

Totals on savings in 1963 by Employee Suggestion and Cost Improvement Proposal systems from all divisions were not available at presstime. However, the totals at Pomona Division (GD NEWS, Jan. 15, 1964) was $168,190 derived from nearly 2,000 CIPs and ESs submitted (531 approved) while at Astronautics the sum saved was $378,851, derived from 2,120 (343 approved).

Janusz said that quality of suggestions was better than ever before. A larger percentage of the division's employees are turning in more ESs and CIPs and having more accepted, showing that they are ferreting out more practical means of doing their jobs better at less cost.

During the year 512 ESs were turned in with 223 accepted, raising the percentage approved from 25 to 43. (National average is between 20 and 25 per cent.) Total savings through ESs was $77,111 with $8,753 paid out in awards. Average payment was $36.93.

Out of 161 CIPs received, 75 were accepted, saving the division $576,060.

High School Seniors Hear Frank Davis

GD/FW President F. W. Davis was a panelist on a career-discussion meeting as part of the 11th annual Citizenship and Career Conference Jan. 24 on the TCU campus.

More than 1,000 seniors from 30 high schools of the area participated.

Search For 'Kamikaze' Defense Led to Creation of Pomona Div.

(Following is the second in a series of articles dealing with history and products of a particular General Dynamics Corporation division, to remind readers of the vast extent of General Dynamics activities.)

Officially established as an independent division on March 1, 1951, the roots of Pomona Division of General Dynamics actually go back to 1944 and a Navy project to find a weapon capable of defense against Japanese suicide plane ("kamikaze") attacks on U. S. warships during World War II.

Studies made in 1944 led to the belief that an ideal anti-aircraft weapon would be one capable of homing on piloted aircraft. Early in 1945 the Bureau of Ordnance (Navy) enlisted the aid of the Applied Physics Laboratory at Johns Hopkins University.

Overall technical direction of an early application of what is now called the "weapon system concept" was assigned to APL which in turn selected associated contractors in many fields: pure research, electronics, explosives and the like. Convair was chosen to carry principal airframe responsibility and had a collateral role in the ramjet burner development.

Work on two types of airframes was carried on at Vultee Field under the direction of C. R. Irvine, chief engineer.

FIRST MISSILE FIRINGS "FIZZLES"

Analysis of aerodynamic data was completed in August and the first missile sent to APL in October. First two firings on the East Coast were not very successful but a third one launched at the new Naval Ordnance Test Station near Inyokern, Calif., in January, 1946, was moderately so. By March of that year a "fully successful" firing heartened engineers and the slow painstaking development and refinement followed. The STV-1 series was followed by STV-2 series (first fired in August, 1947) and the early STV-3 which was first fired April 8, 1948.

A spectacular breakthrough by the contracting team solved the aerodynamic and control problems so well that BuOrd and APL decided to convert the STV-3 into a tactical weapon without waiting for perfection of the ramjet motor. Thus the Terrier missile system was born.

By 1950 the experimental designs had reached a state of success that warranted a major scale production to build up the nation's guided missile arsenal. Manufacturers were requested by Department of Defense to submit a proposal to achieve two objectives: production of a quantity of Terrier missiles and the establishment of a Navy Industrial Reserve Ordnance Plant capable of such production. Verbal acceptance of Convair's proposal was made Jan. 8, 1951, and the Guided Missile Division established March 1, 1951.

Personnel assigned by the parent plant in San Diego proceeded with activation of Plant 2, a rental facility which had been used by Convair during World War II and subsequently found excess. This group established the facility layout and machine requirements for the embryo production operation.

SITE IN POMONA CHOSEN FOR PLANT

The complexity of the project was so great that emphasis was placed on the prompt separation of personnel associated with it from parent Plant 1 management structure, creation of a new division charged with San Diego production problems, and selection of a site for construction of the Naval Industrial Reserve Ordnance Plant.

A site in Pomona, Calif., was chosen and the Navy purchased land on April 4, 1951. Ground was broken on Aug. 6, 1951. While new plant construction was in progress, facilities at Los Angeles County Fairground and in downtown Pomona were used. Construction progressed to the extent that the Engineering Building (Bldg. 4) was ready for occupancy on Aug. 25, 1952. Personnel moved in and six days later, Sept. 1, initial manufacturing operations were started in that building.

As rapidly as other buildings were completed, people were added to the work force by transfer from San Diego or recruited locally. Despite the confusion of this period, Pomona production continued, and the first missile was accepted by the Navy at Pomona in January, 1953.

While early work at Pomona centered on Terrier and its support equipment, later programs have included Tartar and Advanced Terrier for the Navy, Redeye for the Army and Marine Corps and Mauler for the Army. These programs have helped establish the Pomona Division as the nation's leading development and production facility for tactical guided missile systems.

First lot of Terrier missiles produced at Pomona was accepted by the Navy on April 29, 1953. First successful shipboard launching of a high explosive warhead missile from this lot was achieved from USS Norton Sound five days later, May 4, 1953.

MISSISSIPPI USED FOR FIRST TESTING

Early tactical testing of Terrier was conducted aboard USS Mississippi. The cruiser USS Boston was recommissioned and from its deck the first active Terrier was launched in September, 1956. Three months later the USS Gyatt was recommissioned and armed with Terrier, becoming the first guided missile destroyer in the world.

Research and development on Advanced Terrier design proceeded simultaneously with development of the original Terrier. R&D contracts for the improved version were awarded to GD/Pomona in 1951 and 1953 and in 1956 the first Advanced Terrier pilot line missile contract was awarded. By 1959 initial production began.

The Navy constructed and commissioned cruisers and destroyers to carry the new weapons. Today a total of 26 warships are armed with original Terrier or Advanced Terrier.

Both Terrier and Advanced Terrier are beam-riding missiles powered by solid-fuel rockets. A booster supplies initial high thrust, accelerating the missile to supersonic speeds, then drops away. The sustainer, a part of the missile proper, maintains velocity to target intercept.

Both missiles (with boosters) are about 27 feet in length and approximately one foot in diameter. Advanced Terrier also has surface-to-surface capabilities that can be used against shore installations and other surface targets.

Next need of the Navy was for a more compact supersonic guided missile for anti-aircraft protection of destroyer-type ships. The answer was Tartar and first engineering contract for this missile was signed in December, 1955.

First Tartar production missile was delivered to the Navy in May, 1959, and early testing was conducted aboard the USS Norton Sound. Late in 1960 the missile became operational with the commissioning of the USS Charles F. Adams. Since that date 18 destroyers have been especially built to carry Tartar, which also serves as secondary battery aboard two cruisers.

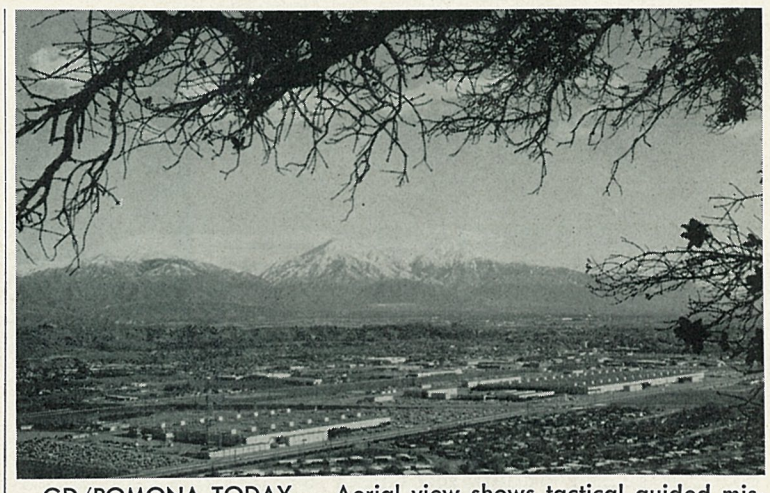
Tartar is a supersonic homing missile designed to serve as an anti-aircraft shield against both low and high-flying aircraft. Measuring 15 feet long, the missile contains a dual thrust rocket motor. The homing guidance system is made up of several interrelated units constructed so they form the basic airframe of the missile.

ARMY BECOMES POMONA CUSTOMER

A solid-fuel, dual-thrust rocket motor was designed and developed to achieve the desired size reduction for this missile. Tartar receives initial thrust during a short burning period that launches and accelerates the missile to supersonic speeds. Then a lower-thrust, long-duration burning period maintains this high speed to target intercept.

In the past few years two weapons for the U. S. Army have been under development at Pomona. One is the shoulder-fired Redeye missile designed for infantrymen of both the Army and U. S. Marine Corps. The other is the Mauler weapon system, a highly mobile air defense missile system that is a keystone of the Army modernization program.

Pomona division personnel began initial Redeye studies in 1956, financed by company funds. Plans had been under development for three years when the first Redeye engineering contract was awarded to the division by the Army.



GD/POMONA TODAY — Aerial view shows tactical guided missile facility's 1,300,000 square feet of buildings located in southwest corner of Pomona, Calif.

Designed to give combat troops the capability of destroying low-strafing or bombing aircraft, Redeye is easily man-transportable and is intended to be shoulder-fired against low-flying jets or conventional warplanes.

The missile launcher outwardly resembles the bazooka of World War II fame and is about four feet long, three inches in diameter and the entire weapons system weighs about 28 pounds. A composite structure, Redeye contains a propellant, an infrared guidance system and a high-explosive warhead.

First contract for Mauler development was awarded to GD/Pomona in 1960. Earlier, 97 firms had been asked to consider the Mauler concept — 31 submitted proposals with competition later narrowed to 12 and then to four before Pomona was selected.

Mauler, a compact, mobile weapon system, will use solid-fuel, radar-guided missiles to destroy short-range tactical missiles and rockets and high-performance tactical aircraft near forward battle area positions.

Each Mauler unit will be contained entirely on a self-propelled chassis and will be capable of delivering accurate fire while moving. In addition, each Mauler unit will contain its own power supply, target detection and electronic fire control equipment, as well as its own battery of missiles.

Development and production of guided missiles has been the chief concern of Pomona division but it is by no means the only activity engaging the diversified capabilities of the division.

POMONA ACTIVE IN ASSIST WORK

The division has done assist work for Astronautics, Convair and Fort Worth divisions. One of the most important contributions in this respect was made to the Atlas program by work on hardware and automatic test equipment.

Customer training courses for armed forces personnel have been conducted through the years. Classes to familiarize Navy officers and men with Terrier, Advanced Terrier and Tartar missiles have been given in the past and key Army personnel are now being briefed on Mauler operations.

Corporal missile handling trainers were built at Pomona from 1954 to '56. The Corporal is an Army surface-to-surface missile with a supersonic speed and a range of 75 miles.

Independent research and study programs have included such diverse products as a manned anti-satellite system to inspect and, if necessary, destroy hostile craft in orbit and a "solid state image converter" used to photograph recent eclipse of the sun.

The principal manufacturing facility at Pomona is capable of large volume production of guided missiles and complex electronic systems. Fabrication, assembly and checkout are accomplished within the 750,000 sq. ft. of this area.

The engineering department at Pomona houses a complete weapon system development and product engineering facility, staffed by experienced and highly competent engineers, scientists and technicians.

Analog and digital computer laboratories, antenna test ranges, fully equipped metallurgical and chemical laboratories and environmental test chambers help effect a complete engineering facility.

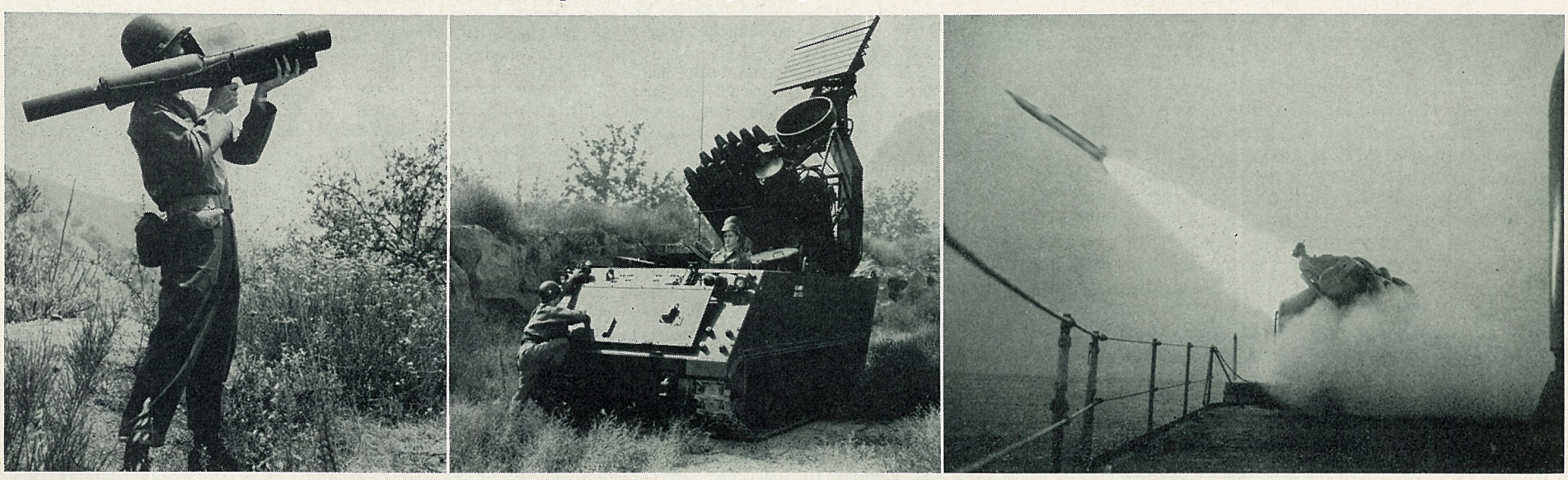
PRESENT POPULATION IS ABOVE 6,500

Present facilities at Pomona cover 1,300,000 sq. ft., housing in excess of 6,500 employees. C. F. Horne, former Civil Aeronautics Administrator, is president of the division and a vice president of General Dynamics Corporation.

Horne, a retired Navy rear admiral, was graduated from the United States Naval Academy at Annapolis in 1926. He has a master of science degree in communications and electronics from Harvard University. Active in many professional and civic organizations, he is currently president of Electronic Industries Association. He was named manager of the Pomona Division in 1953.

In 1961 the Ordnance Aerophysics Laboratory located in Daingerfield, Texas, was placed under the supervision of Pomona Division. The Daingerfield facility has two modern high altitude test cells, two sea level test cells and one small scale cell. The high altitude chambers are designed for blowdown operations and are capable of free-jet and connected inlet testing of full scale ramjet engines.

Operated by General Dynamics for the Bureau of Naval Weapons, the laboratory employs approximately 260 engineers and technicians.



POMONA PRODUCTS — At far right, supersonic Tartar guided missile which now arms more than score of warships, leaves launcher. In center is engineering model of Mauler, air defense guided missile system with capability against short range rockets. At left is shoulder-fired Redeye guided missile.

Suggestions and Cost Proposals Save $378,850 at Astro in 1963

During 1963, GD/Astronautics folks in San Diego and at off-site bases suggested ways to reduce the division's operating costs which will save $378,851.

Ideas were submitted under both the Employee Suggestion (ES) program, which pays hourly employees 10 per cent of the first year's net savings on any approved ideas, and a companion Cost Improvement Proposal (CIP) plan for salaried personnel.

While the bulk of suggestions in 1963 came, naturally, from employees concentrated in GD/Astro's San Diego locations, the off-site bases — Vandenberg AFB, AMR at Cape Kennedy, and Edwards RS — contributed their share.

At Vandenberg, Robert D. Johnson, Dept. 682-2, was big winner, receiving $933 for his idea for a machine to clean rails of gantry-type Atlas launch stands. His ES will save nearly $10,000 in its first year of use, over the previous hand-cleaning method.

Also at Vandenberg, L. Culwell and J. D. Harrison, both Dept. 692-1, shared a $241.90 award for suggesting shields to protect transducers during launch preparations and launch, and Gary R. Van DeVenter, Dept. 576, suggested a new form for ordering replacement parts and was awarded $291.60.

D. C. Swann, Dept. 369-2 (Vandenberg AFB), will save GD/Astro $3,721 during the first year his CIP to reduce burn damage to support equipment during Atlas launch is in use. As a salaried employee, Swann received a certificate of merit for his proposal, and an appropriate notation of his contribution to the division's cost reduction effort has been made in his personnel record.

At Edwards RS, Julius L. Grieco, Dept. 975-3, received a total of $250.70 for two ESs which saved the company $1,173 and $1,334 respectively.

In Florida, M. C. Roberts, Dept. 571-3, suggested installing permanent welding leads to all levels of Cape Kennedy service towers instead of making temporary installations each time welding was required. His ES earned him $448.90, and will save GD/Astro $4,489 in its first year of use.

In all, the suggestion review and evaluation section of GD/Astro's division systems (Dept. 170) which administers the programs, saw 36 CIPs with total savings of $154,072 installed during the year. Hourly employees were paid $23,818 for savings of $224,779 on 307 approved ESs during 1963.

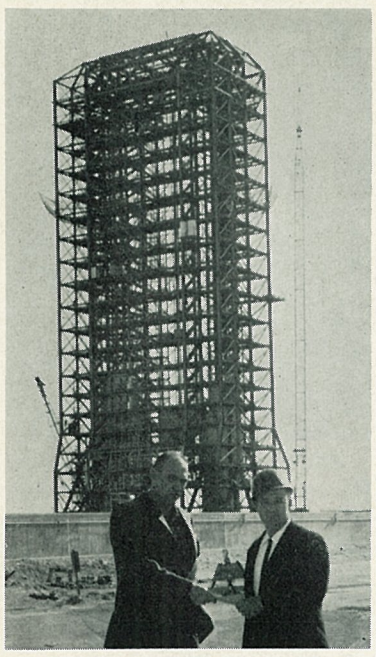
Specifically, 136 awards of $10 each were made on "intangible" suggestions — those which improved safety or other factors of an operation but to which no dollar savings could be directly attributed. Submitters of 101 ESs earned between $11 and $99; 61 ideas were in the $100 to $499 award category; and six earned $500 to $999.

Three employees received awards of $1,000 or more during the year.

President J. R. Dempsey has urged all employees to make a special effort to see that the division's traditionally high standards of quality and reliability are achieved for minimum operating costs during 1964.

By pairing their efforts in this direction with the ES and CIP programs, employees can reap personal rewards, while helping to achieve the division's goals, and those of the government as expressed recently by President Johnson and Defense Secretary McNamara.

Forms for submitting ideas are available at suggestion boxes throughout GD/Astro's facilities. Completed forms deposited in these boxes are personally collected each Monday by division systems analysts and processing proceeds with maximum speed consistent with thorough investigation and evaluation.



AT AMR—M. C. Roberts, right, receives $448.90 check from Tom Henry, GD/Astro manager of operations support at Cape Kennedy, for his Employee Suggestion which will save $4,489 in first year of use.

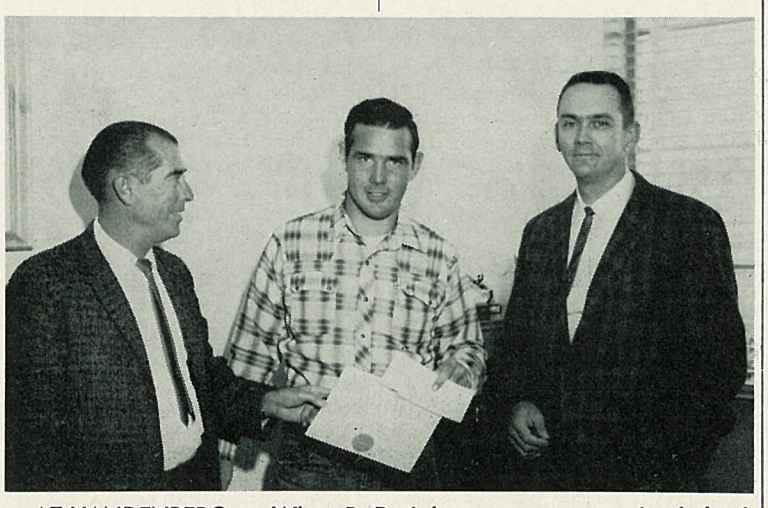
MACHINE SHOP CONTINUES LEAD

Cumulative average on Quality Reports for November and December show Plant 19 machine shop (Dept. 715) still leading in the race for GD/Astro's initial Craftsmanship award to be presented in February.

In second place is processing (Dept. 733) which, like the Plant 19 group, held a similar position in November standings. Moving into third spot is plaster, plastic and foundry (Dept. 454).

Initial Craftsmanship award will be based on a three-month average to be calculated when January reports are complete.

The competition is part of a division-wide effort encouraging all GD/Astro employees to "Do Good Work." The contest includes 13 major production departments.



AT VANDENBERG — When R. D. Johnson, center, received check for $933 as award for ES which will save company nearly $10,000 in first year of use, his supervisor, Frank Fitch, left, and D. L. Fagan, right, director of GD/Astro operations at PMR, were on hand to extend congratulations.

Value Engineering at Astro Returns Dollar For Every 10c Invested

During the past year, General Dynamics/Astronautics has saved nearly a dollar for each and every dime invested in value engineering!

These figures were released earlier this month as the division accelerated an already active cost reduction program in response to President Johnson's requests to industry.

Actual ratio of savings resulting directly from value engineering projects at GD/Astro during the last 12 months currently stands at 9.6 to 1, in relation to the cost of both indirect and direct manhours devoted to the VE program.

The trend indicates that even this record will improve in the future!

The division's value engineering program is a two-pronged effort.

On the one side are seminars — essentially training programs to indoctrinate personnel from various GD/Astro departments in the principles of value engineering — but carefully designed around actual hardware projects so that the instruction can "pay its own way."

On the other hand are VE projects — often initiated by individual employees — within operating groups via departmental value control coordinators.

If seminars supply the "VE recipe," departmental action to apply its principles in day-to-day work are "proof of the pudding." In the past year, 94 VE projects have developed through departmental initiative, and to date, 26 of these have been implemented. Another 45 are still open.

GD/Astro first turned the spotlight on value engineering four years ago, opening its first VE seminar in 1960 under auspices of the educational services section of industrial relations (Dept. 130-3). The original programs involved participation of 12 to 16 persons, divided into four-man teams.

By June, 1961, nine seminars had been completed.

The educational effort continued through the months which followed, with Everett Lindem, Dept. 130-3, serving as regular VE instructor, a task which he continues in the one-a-month series of 1964 seminars.

In January, 1963, E. D. Heller, nationally-known VE figure, transferred to GD/Astro from GD/Pomona as manager of value control (now manager of cost reduction and value control).

His job was to "set up a formal division VE organization, to direct this program, and to apply value improvement practices to existing products and to the engineering design of other original products."

"We must assure ourselves and our customers that maximum value is received for every dollar spent," said President J. R. Dempsey in announcing his appointment.

In June, the first of a new series of VE seminars got under way within the framework of Heller's organization, and he challenged participants to "return in savings, several times the cost of time spent in seminar activities."

Seminars were modified slightly in terms of size (an average of 40 participants in eight teams), and in terms of project selection. Teams were now presented with projects carefully chosen by the value control organization on the basis of instructional value and in terms of potential for returning actual dollar savings.

In general, any project must now have at least $15,000 remaining in firm or likely business, to be considered as a seminar topic.

Classic example of dollar savings to result from a VE seminar is a project soon to be included in a Headquarters, U. S. Air Force, display in Washington, D. C. It concerns a unit known as a torus ring which underwent VE scrutiny by a team participating in the June, 1963, seminar at GD/Astro.

The ring is fabricated of Inconel — a costly aerospace alloy — and had been made from two curved, 180° pieces welded together. This method called for two welds, and resultant waste as the two curved pieces were trimmed for joining. Unit cost by the original method was $125.

The seminar team devised the ingenious idea of forming a tube into a helical coil; cutting six full rings or more at a time; and welding in 360° pieces. Result? One weld instead of two; no material waste; unit cost $54.

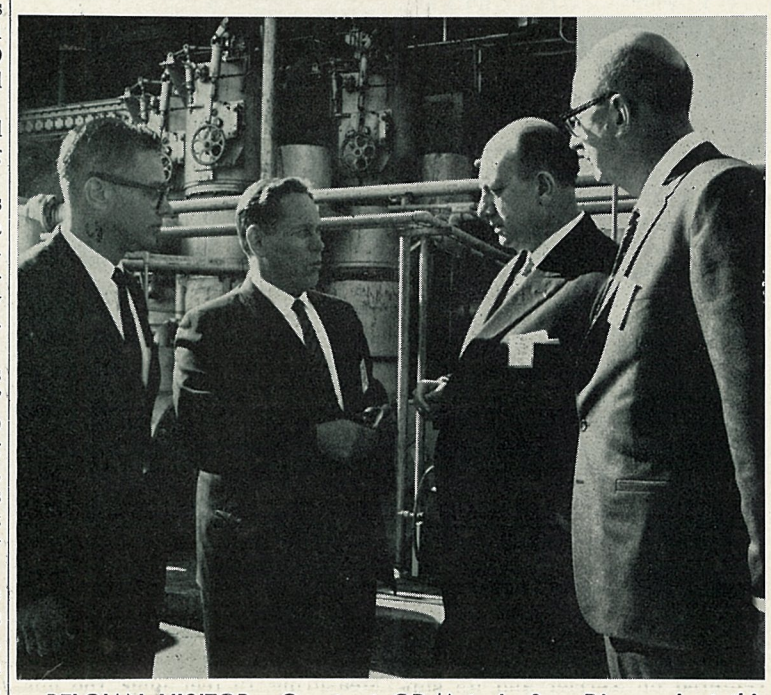
It cost $3,300 to implement the torus ring VE proposal. In return, GD/Astro — and its customer — netted savings of $55,000 from firm business, with an additional $92,000 possible from future business potential.

Sometimes VE recommendations have a turn-about effect. In the case of one June seminar project, the VE team carried its proposal to engineering design. Here, in the course of evaluating the seminar idea, engineers devised a new and even better way to do the job!

No less than three of the eight projects from the second 1963 seminar (October), now appear to be firmly on the road to implementation — and to substantial savings.

W. W. Withee, vice president — engineering, summed up one of value engineering's most valuable side-effects when he addressed participants in the final 1963 seminar.

"The real pay-off," he said, "will come when you return to your jobs, and use VE as part of those jobs, and disseminate this kind of thinking to those around you."



BELGIAN VISITOR—Guest at GD/Astro's San Diego plant this month was Maurice Desirant, second from right, managing director of ETCA, new Belgian firm formed jointly by General Dynamics and ACEC of Belgium. Shown after inspection of environmental test facility are B. G. Anderson, left, formerly of GD/Astro and now deputy managing director, ETCA; Sam Ackerman, GD/Astro vice president—electronic programs; Dr. Desirant; J. D. Phelan, director of marketing, systems development.

First Seminar of '64 Concluded At Astro, Another Will Begin

GD/Astronautics' initial value engineering seminar of 1964 concluded last week, setting the pace for a series of 11 more to be conducted throughout the year on a one-a-month basis.

Participants represented a cross-section of GD/Astro departments, and were divided into eight seminar teams to pool varied training and work experience on carefully selected projects.

The recent seminar opened Jan. 13 with an all-day session.

Subsequent meetings were held 8 a.m. to noon, daily through Jan. 23 and on Jan. 24 spokesmen for each team made informal presentation of seminar projects to management.

Earl Hill, GD/Astro controller, was to have given the closing address.

The seminar was coordinated by Everett Lindem of educational services (Dept. 130-3) reporting to Jack Croft, chief. It was conducted within the framework of the division's over-all cost reduction and value control (Dept. 192-0).

Originally scheduled to be held in the Bldg. 5 mockup conference room, seminar sessions were shifted to ARA Clubhouse when the original meeting place was required for an Air Force first article inspection.

Teams and their projects were:

Team #1—LO2 relief valve overboard vent. E. P. Cormier, Dept. 558-5; E. E. Darling, Dept. 835; M. M. Montgomery, Dept. 662-5; Herman Reichert, Dept. 652-2; E. R. Whitton, Dept. 332-1. Project leader, Erv Sommer.

Team #2—Destruct unit arming device mount installation. W. J. Dawsey, Dept. 405; H. A. Lawrence, Dept. 373-7; E. W. Montgomery, Dept. 404-1; McDonald Nelson, Dept. 557-2; F. M. Wynkoop, Dept. 197-0. Project leader, Sommer.

Team #3—Fuel probe assembly nut. C. E. Damschroeder, Dept. 403-3; R. F. Georgeton, Dept. 373-9; E. L. Hutchins, Dept. 143-2; P. M. Schroeder, Dept. 580-3; M. N. Delperdang, Dept. 832-0. Project leader, Gene Holston.

Team #4—Heat exchanger hoses. B. J. Cheshelski, Dept. 661-3; C. Hicks, Dept. 384-3; H. A. Lambert, Dept. 364-0; H. A. Schwab, Dept. 141-0; W. A. Wilkinson, Dept. 404-1. Project leader, Holston.

Team #5—Aerosol paint cans. W. G. Ravenscroft, Dept. 528-3; R. G. Lykins, Dept. 123-0; R. E. Pullen, Dept. 780-3; C. Troupe, Dept. 310-0. Project leader, Hank Hudson.

Team #6—Door and actuator assembly. R. E. Bailey, Dept. 661-7; C. F. Crownhart, Dept. 967-3; W. A. Green, Dept. 812-3; C. W. Hicks, Dept. 780-3; W. J. Ridge, Dept. 192-0. Project leader, Hudson.

Team #7—Turbo-exhaust support, Alan Fullarton, Dept. 454; W. H. Jaeger, Dept. 652-2; B. K. Neil, Dept. 380-2; H. H. Tracy, Dept. 549-9; E. N. Bailor, Dept. 954-5. Project leader, Dave Willingham.

Team #8—Air conditioning clamp assembly. P. P. Howie, Dept. 405; F. N. Paplawsky, Dept. 145-3; V. W. Walsh, Dept. 835; H. C. Watton, Dept. 661-2; K. A. Kolozvary, Dept. 032-4. Project leader, Willingham.

Astro Daughter Off To New Zealand

Nancy Billmire, 17, daughter of R. W. Billmire of GD/Astro's plant engineering (Dept. 250-2) left San Diego last week to spend a year in New Zealand as an American Field Service exchange student.

Nancy will live with the I. L. Campbell family in Auckland while attending Glendowie College.

Both GD/Astro Management Club and Employees' Con-Trib-Club have contributed funds to help support the AFS effort, which promotes international good will by permitting foreign students to study in this country, while U. S. students study abroad.

Entire Wawona Lodge Reserved For Bargain Weekend in Snow

As a result of tremendous response to the General Dynamics Ice Skating Club-sponsored Winter Weekend at Big Bear Lake, Feb. 7-9, a second trip has now been scheduled for Feb. 21, 22 and 23.

The original outing was completely "sold out" within a week of its initial announcement.

The second trip is identical in all respects to the first. The group has reserved all Wawona Lodge facilities at Big Bear, including rooms with bath for 2, 3, 4 and 5 persons, and 18 cabins for groups of 3 to 12.

Total cost of $12 per person will include lodging, two ranch-style breakfasts and one dinner, plus a pizza snack at the traditional Saturday night dance. Catering will be handled by Gil Hutter, Prophet Co. manager at GD/Astro.

The second event, like the first, is open to all GD/Convair, GD/E, and GD/Astro employees and their families. Participants must make their own transportation arrangements.

Reservations will be accepted at employee services outlets through Feb. 17. Information is available from ARA Commissioner Bud Davies, or Barbara Gilliland, both at GD/Astro main plant ext. 4041.

Garden Clubs To Meet Feb. 5

Next meeting of ARA-CRA Garden Clubs will be held at 7:30 p.m., Feb. 5, in Balboa Park's Floral Association Bldg., and will feature demonstrations of both Japanese and modern flower arranging.

Both ARA and CRA organizations elected new officers at their January meeting.

Charles Splinter, Dept. 759, heads the Astro club as president, with Paul Leach, Dept. 364, vice president; Helen Spann, Dept. 953, secretary; Bill Spann, Dept. 953, librarian. Carolyn Buman, Dept. 512, is hostess in charge of new members and visitors, and Mr. and Mrs. Albert Hornby, Dept. 972, will arrange refreshments.

The CRA unit is headed by President Danny Blum, Dept. 3, (ret.), with Lyle Humphrey, Dept. 131, vice president, and LeVonne Splinter, Dept. 11, secretary.

January club meeting featured a demonstration of rose culture and pruning by Jim Kirk, past president, San Diego County Rose Society.

ARA Commissioner Everett Henderson announced that the groups' Spring Rose Show has been scheduled for April 5 in Balboa Park. He reminded all GD/Astro, GD/Convair and GD/E employees that the clubs have arranged for them to purchase bare root roses at 25 per cent discount.

Special order blanks are available at all employee services outlets, and Henderson may be contacted at GD/Astro ext. 2236 for further information on this program.

WATCH IT! KEEP SPEED TO 15 MPH

Convair, Astro, and Electronics drivers who ignore the in-plant speed limit of 15 miles an hour are in danger of losing the privilege of bringing their cars within Plant 1, warns J. K. Field, Convair manager of personnel services.

"We intend to clamp down on all drivers who do not observe this rule," said Field. "Even 15 miles an hour is, in many instances, too fast to drive within the plant without endangering lives of workers or pedestrians."

Safety engineers have authority to report all violators. In-plant parking privileges will be withdrawn whenever drivers are found exceeding the speed limit.

Only exceptions to the 15 mph speed limit are ambulances and fire trucks on emergency runs.

Graves Named To NMA Post

Reese E. Graves, who heads GD/Astro's engineering management practices section (Dept. 529-0) has been elected a director of the National Management Association (NMA).

R. E. Graves

As such he will represent the nine San Diego-area clubs, including Management Clubs at GD/Astro, GD/Convair, and GD/E-SD, on the national organization's highest policy-making body.

Graves has been a member of the GD/Astro club for more than four years, and has served on committees concerned with management development, education, and understanding of the American free-enterprise system.

During his term as national director, he will perform the dual function of representing San Diego groups in the formulation of NMA policy, and conversely aid in promulgation of NMA information among member clubs.

Graves is a Navy veteran, and holds a BA degree from San Diego State College, where he has also engaged in advanced study in industrial psychology.

He holds licenses or credentials for teaching, as a management consultant, vocational counselor, industrial psychologist, psychometrist, and certified employment consultant. He joined GD/Astro in 1959.

DYESS PERSONNEL DONATE $2,000

DYESS AFB — GD/Astronautics employees here recently presented $2,000 to the United Fund of Abilene (Texas) to bring that organization's current drive to 99 per cent of its goal (later reached).

Acting on behalf of all Astro employees here, the Dyess AF Advisory Committee of Con-Trib-Club voted the contribution to help meet the overall goal of $360,000 set for the drive.

Acting for Astro employees at the presentation were Robert Morris, D. E. Bolin and Charles Koberg. Accepting were Leroy Langston and Robert Tiffany, co-chairmen for the drive. Ceremonies were held in the office of Oliver Howard, president of the Citizens National Bank.

IR Alumni of Cal Form Association

An Alumni Association of University of California Extension Industrial Relations Certificate holders has been organized with Yale Naliboff of General Atomic as president and Frank Burr of Astronautics as vice president.

Naliboff estimates a potential of more than 100 members in the San Diego area and suggests that those interested in joining can reach him at 459-2310, ext. 444. A meeting is set for mid-February.

Astro Wives Stage Dance at Dyess Club

DYESS AFB—More than 180 Astronautics employees and their spouses were on hand Dec. 28 when GD/Astro wives staged a dinner-dance at the Dyess AFB Non-Commissioned Officers Club.

The holiday affair was arranged and presented under direction of Mrs. F. R. Key and a committee composed of Mrs. W. A. Striplin, Mrs. J. A. Hammett, Mrs. R. J. Cushway and Mrs. T. H. Heter.

Salvage Schedule Set for February

Salvage yard schedule for the next four weeks at GD/Astro's main plant and GD/Convair Plant 1 is:

GD/Convair—Feb. 1, Feb. 15.

GD/Astro—Feb. 8, Feb. 22.

English Class Begins Feb. 5

In-plant courses at GD/Convair open next Wednesday (Feb. 5) for the spring semester, reminds Wayne Turner, educational services coordinator.

General Dynamics people have until then to register through Convair educational services for any of the five classes.

First class to meet on the opening date is English for Technical Writers, scheduled for Wednesdays, 4:30-7:30 p.m.

The following week (Feb. 10-11) the other courses will hold opening sessions: Intermediate Technical Writing, Mondays; Technical Writing Workshop, Tuesdays; Technical Proposal Writing, Tuesdays; Basic Electricity, Mondays.

All will be three-hour classes, 4:30-7:30 p.m., and will be held in Plant 1's Bldg. 14 classrooms.

Registration may be made by calling educational services office, ext. 491, Plant 1.

Cherry, Handwerker To Teach Classes

Two GD/Astro men will serve as instructors this spring in purchasing and materials management courses to be offered by San Diego City College.

R. L. Cherry, Dept. 831-4, will instruct Introduction to Purchasing, meeting for the first time on Feb. 4, 6:30 to 9:30 p.m., and Ben J. Handwerker, Dept. 405-1, will teach Materials Handling, Traffic, Transportation, beginning Feb. 5, at the same hours. A third course in the series is Materials Cost Estimating, opening Feb. 6.

Classes meet at the college, and carry credit toward the AA degree or certificate. Additional information should be obtained directly from the college.

Mendoza Re-elected To Recreation Post

Ray Mendoza, Astronautics employee services supervisor, was installed for a second term as president of the San Diego Industrial Recreation Council, Jan. 18.

Installation came at a Sands Hotel dinner attended by Astro, Convair and Electronics Division professional and volunteer recreation leaders.

Entertainment included GD/Convair's M. C. Val Dez and Astro's C. C. Jones. C. F. "Biff" Gardner, San Diego County park and recreation director, was installing officer.

Association Seeks SD State Alumni

San Diego State College Alumni Association is seeking to reach former State College students within General Dynamics divisions in San Diego who are not presently Association members.

An intensive membership drive is being held. Benefits include reduced rates to campus events. Former students are invited to contact the Dean of Students office at State College.

Astro Man Authors Currency Catalogue

A new illustrated 1964 catalogue titled "World War II Military Currency" has just been published by GD/Astro's Raymond S. Toy (Dept. 250).

The catalogue, priced at $1.50, includes all known issues of World War II and post war military currency issued by the United States and its former and present Allies.

Tube Simulates Conditions On Surface of Other Planets

A new General Dynamics facility, more advanced than any other in the country, soon will be adding to man's knowledge of interaction of space vehicles with the atmosphere surrounding other planets as studies get under way in the GD/Astronautics physics laboratory.

GD/Astro's 55-ft. long, 24-inch diameter shock tube, now undergoing operational checkouts, is the largest high vacuum facility now available, said W. J. Hooker, head of Astro shock physics research. Hooker has directed the development of the tube since pre-design started just two years ago.

The shock tube, which fundamentally is nothing but an extremely fast oven, explained Hooker, gives a ten-fold increased capability over tubes now generally in use. Another 24-inch tube developed by AVCO-Everett Research Laboratory and used for high temperature air studies, does not provide the pressures of the GD/Astro facility.

Pressures 10 billion times lower than normal atmospheric pressure can be obtained in the GD/Astro tube with temperatures equalling the surface heat of the sun (9,000 to 10,000 degrees F.) obtained in less than one-millionth of a second.

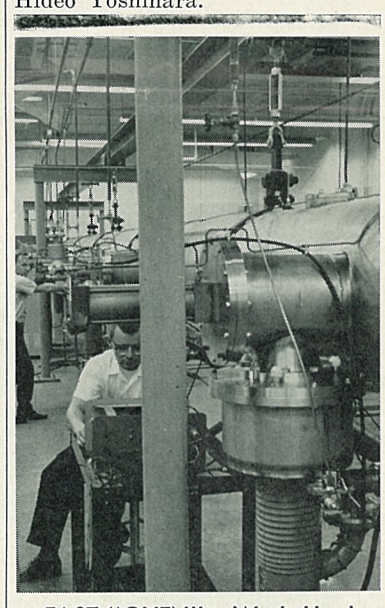
Astro studies will concentrate on combinations of non-air gases, such as carbon monoxide, carbon dioxide, oxygen, which make up atmospheres of other planets.

Shock waves can be sent through samples of gases to generate extremely high temperatures in very short times—total duration of uniform heating runs from 10-millionths to a few thousandths of a second.

During the infinitesimally short times the gases are brought up to the fantastically hot temperatures, properties of the gases—their atoms and molecules—can be studied while yet unchanged. Information on temperature, pressure, rate of heat transfer is converted to electrical signals and recorded on an oscilloscope for later analysis.

"From what we learn about the structure of gases and compounds formed from the gases, we will be able to greatly expand our knowledge of the atmospheric conditions which will be encountered when we launch space vehicles to other planets," Hooker said.

Besides Hooker, Astro men most involved during development of the tube are Thomas Kramer, Steve Tomaiko, both of Dept. 596, and Frank Brown of Dept. 756. The physics research lab is a function of Astro space sciences laboratory under Dr. Hideo Yoshihara.



FAST "OVEN"—W. J. Hooker (foreground) and Tom Kramer, GD/Astro physics researchers, study rate evacuation to ultimate vacuum during preliminary check-outs of new shock tube.

Harry Richards Low With 76

Reservations for ARA Golf Club's tournament Feb. 15 and 16 at Rancho Bernardo will be accepted by ARA Headquarters, ext. 1111, starting Feb. 3.

In the January sweepstakes played in mid-month at the new San Luis Rey course, Harry Richards scored low gross 76 in the 0-12 handicap bracket, followed by Jack Weaver with 77 and Dan Scott with 78.

Low net scores in this category were H. H. Moran's 68, 71 from C. B. Bagaloff, and 74s by Ron Bruck, Bill Kurch, John Sentovic and Phil Raney.

In the 13-16 handicap class, Chuck Petty and J. Bechard shot 84s for low gross, Ray Cleary had an 85, and Jack Albright and Fulton Smith turned in 86s. Low net was 68 from Ray Steinwehe, 72s by Lin Richardson, George Loudermilk and Ed Bourgeois, and 73 from Owen Hasbrooke.

Phil Mattson shot a gross 85 in the 17-22 handicap bracket, trailed by Hank Gallant with 88 and Hal Heist with 89, while net 68s came from Tom Lazos and Martin McEachern, 70 from Dick Marlowe and G. Washburn shot 71.

Among 23-26 handicappers, C. Meinsen's 87 was low gross. Duane Scott tallied 95, and 97s came from Howard Kuykendall and M. A. Murray. R. Morgan reported low net 67, with 70s by G. Cooper and Bill Shiba, and 71 from Louise Kring.

SCHINDLER SCORE NEAR PERFECTION

Al Schindler scored only two points less than perfect, 298 of 300 possible, in the first ARA Pistol Club .22 Camp Perry Police Course match of the year.

Trailing this in master class were two 296 scores by Warren Ranscht and Roscoe Anderson, with 12 and 8 Xs respectively, while Roland Schneider fired 293 and Ralph Sanderlin, 291.

Bill Givens' 285 topped 275 from John Bennett in expert category, and Bill Worthington took the sharpshooter bracket with 262 over Byron Clapper's 223. Lyle Ewing was top marksman with 223.

In a .22 Short National round, Schindler again was high with 287, trailed by Givens' 285, Sanderlin with 284, and Ranscht's 281.

Bridge Fans to Earn Full Master Points

Full master points will be awarded to winners at ARA Bridge Club's next two meetings, Jan. 31 and Feb. 7, 7:30 p.m. in ARA Clubhouse, with fractional points going to those placing second, third and fourth.

College Honors GD/Astro Men

Two Astronautics men, J. Ray Tucker and Robert R. Mendoza, and some 500 members of the San Diego Chapter, National Association of Accountants, have been lauded for their part in Operation Padrino.

Chapter officers, directors and their wives were special guests of the College of Business Administration, University of Baja California, recently. Tucker, past president of NAA, and Mendoza who helped spearhead the effort, received engraved parchment scrolls from Director Antonio Martinez Zarazoza.

Operation Padrino was a chapter project which resulted in collecting and turning over to the Mexican college some 700 sorely-needed text books on accounting. Continuing, the program is now involved in rounding up special lecturers to appear before college classes to explain modern accounting methods. In addition, plans include aiding students with limited funds.

ARA Calendar

GARDEN CLUB—Meets 7:30 p.m., Feb. 5, Floral Assn. Bldg., Balboa Park. Flower arranging demonstrations.

ROCKHOUNDS — Weekend visit to Jade Mountain Mines and gem show at Indio Date Festival, Feb. 15, 16. Information from Fred Baugh, main plant ext. 3580.

TEEN CLUB—Dance Feb. 1, 7:30 to 11 p.m., ARA Clubhouse. One guest per member. Admission, 25 cents per person. Band to be announced.

TOASTMISTRESS — Serra Mesa Club meets first and third Mondays, 7:30 p.m., ARA Clubhouse. New members welcome.

'On Target' Is First On List of Movies

Up-coming films in the series of lunch hour movies to be shown at GD/Astro, Tuesdays through Fridays at 11, 11:30, 12 and 12:30 in Room 3, Bldg. 17, have been announced.

"On Target," featuring an Atlas missile launch will be shown Jan. 30 and 31; "Mouth-to-Mouth Resuscitation for Emergencies," Feb. 4 and 5; "Bunker Hill, 1964" (about construction and readiness of U.S. missile defenses), Feb. 6 and 7.

A double feature is scheduled Feb. 11 and 12, with both "On Impact," about automobile test crashes in highway safety studies, and "Coronary Heart Disease," to be shown.

ARA Skiers to Visit Slopes at Mammoth

ARA Snow Ski Club is arranging a group trip to Mammoth, Feb. 14-16, with reservations now being accepted by Vern Norris, main plant ext. 3983.

Limited to the first 36 persons to apply (with preference for Snow Ski Club members), a chartered bus will depart San Diego Friday evening, returning on Sunday.

Tryouts Scheduled For Astro Players

Tryouts for Astro Players' spring production, "The Curious Savage," will be held Feb. 6 and 7, 7:30 p.m. in ARA Clubhouse.

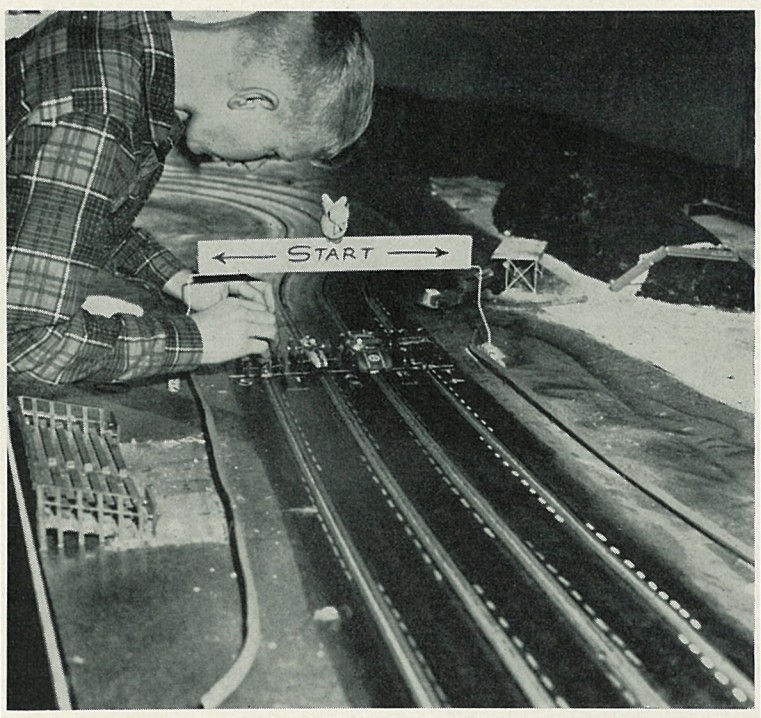
Ten roles—five each for men and women—are open. Title role in the John Patrick comedy will be taken by Lillie Mae Barr, Prophet Co. employee at GD/Astro, well known for her comic characterizations with San Diego theater groups.

Beginners Riding Class Will Start

A new beginning riders' class sponsored by Astro Equestrians, ARA horsemen's group, will open at 10 a.m., Feb. 9, at Bradley's Bonita Valley Farm.

Cost of the eight-week lesson series is $15 per person.

Application forms are available and fees may be paid at any employee services outlet.



COUNT DOWN — Young fan positions racer at starting line of slot racing layout recently acquired by ARA. Shown here in hobby shop in which it initially operated, track will be set up in ARA picnic pavilion under direction of C. M. Ogle, Astro Modelers commissioner, who made picture.

Off and Running

New Modelers Division Racing Miniature Electric Autos

A new division of Astro Modelers, ARA modeling club, is now being organized in recognition of the growing hobby of "slot racing" — miniature racing of small electric-powered cars.

The sport derives its name from slots in the roadway which hold the quarter-inch scale cars on the track. Cars are self-powered and, as in model railroading, are controlled via a "power pack."

ARA has recently acquired sufficient track for an 8x38-foot layout — some 120 feet of roadway — which will be erected in ARA picnic pavilion. The setup includes panels for independent control of four cars at the same time, and tracks have automatic lap counters.

C. M. Ogle, ARA commissioner, explained, "This is really a family sport. The club will have no age limits, and teen-agers are especially encouraged to take part."

Participants will be invited to bring their own cars — available as sports cars, modified stocks, hot rods, in prices ranging from $5 to $20 — and race them over ARA's track. When erected, the layout may be open nightly if interest warrants.

City-wide competition is possible, since the three other major slot racing groups in San Diego have expressed interest in inter-club contests according to National Slot Racing Association rules.

Volunteers are now sought as charter members of the group, and to assist Ogle in setting up the track layout. Interested employees or dependents have been urged to contact him at Plant 19 ext. 591 for more information.

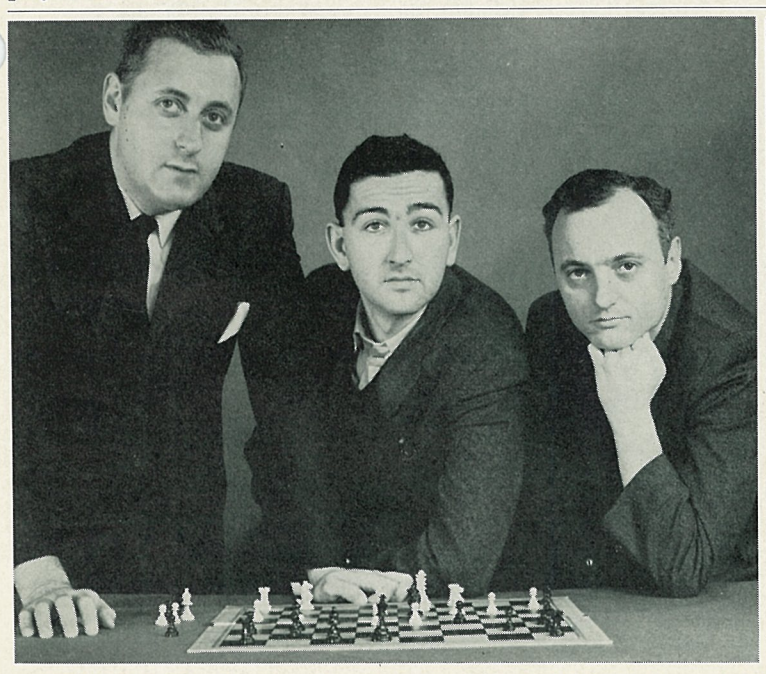
Here's Golf Schedule For '64

It's membership time for ARA Golf Club, with cards for the 1964 season now available at all employee services outlets.

The $2 annual membership fee is applied toward tourney prizes throughout the year, and the club is open to all GD/Astro employees and dependents. Questions may be referred to ARA Commissioner Dick Tobias, Plant 19, ext. 1386.

Tournament schedule for the coming year is:

Feb. 15-16	**Rancho Bernardo**
March 21-22	**Carlton Oaks**
April 18-19	**Fletcher Hills**
May	**Reserved for Industrial Tournament**
June 6-7	**Balboa**
July 11-12	**Torrey Pines**
Aug. 2, 9, 22, 23	**Carlton Oaks (Club Championships)**
Sept. 19-20	**Coronado**
Oct. 10-11	**Bonita**
Oct. 31 - Nov. 1.	**Circle R**
Dec. 5-6	**Rancho Bernardo**



STRATEGISTS—Newton Grant, right, defeated Art Werbner, left, in final round of ARA chess competition to win 1963 plant championship. Both are in Dept. 958. Center is Stewart Daniels, Dept. 158, who edged ARA Commissioner Jack Horning to place third in contest.

Rockhounds to Visit Mines Near Indio

Storm's Jade Mountain Mines in Joshua Tree National Monument north of Indio is destination Feb. 15 of ARA Rockhounds as the group seeks native California jade and other "rarities."

Commissioner Fred Baugh reminded participants that there will be a fee for digging, and that they should provide their own tools and water. Camp sites are available.

The following day the group will attend a gem show in conjunction with Indio Date Festival. Baugh has invited visitors and guests to take part in both activities, and will provide maps and additional information to those who contact him at ext. 3580.

BLAIR ELECTED BY PR SOCIETY

R. T. (Ray) Blair Jr., GD/Astro manager of community relations and arrangements (Dept. 122) has been elected vice president of San Diego chapter, Public Relations Society of America.

Sports & Recreation

Dates Set For Annual Plant Bowling Tourney

Astronautics Recreation Association has scheduled its annual plant championship bowling tournament for April 4-5 and 11-12 at Clairemont Bowl.

Previously, this event was staged just prior to the annual year-end holiday period. It was rescheduled this year in hopes it would not conflict with personal plans of Astro keglers.

In all respects it remains the BIG tournament of the year for ARA, bringing together the best of bowlers who compete on a handicap basis. There will be team events for men's and mixed teams, singles events for men and women, mixed and men's doubles and all-events for both men and women. Team events will be held April 4-5, followed by singles and doubles on April 11-12.

Entry forms will be available shortly after the first of February at employee services outlets as well as bowling establishments where ARA-sponsored leagues are now in action.

Bill McHorney, new ARA staff member, will be tournament director with commissioners, directors and key league officials making up a tournament committee.

ARA TEAMS EXPECTED TO BE CONTENDERS IN CITY HOOP MEET

Indications are that ARA-sponsored basketball teams will be tough contenders in San Diego action this season after one team (the Varsity) copped the Municipal Pre-Season Tournament title, while the "B" team gained the quarter finals in the same event.

The Varsity five, coached by H. W. "Hank" Fuller, will compete in City/AAU action, while the "B" team under Jim Henry will vie in the Metro League. Action is under way in both at present.

Averaging 68.3 points per game, the Varsity chalked up seven wins and two losses in pre-game action. The final game of the pre-season event found Astro ekeing out a 49-48 victory over Calewo. Prior to entering the league play, the same team topped Phib-Pac, 11th Navy District champs, in a 98-89 game.

Percy Gilbert has paced point makers with a 16-point average, followed by Denny Henry with a 10-point average and Jim Doherty with a nine-point average. Dick Rosen, Jess Coffey and Don Early round out the starters.

The "B" team chalked up a pre-season record for four wins and two losses. Calewo dumped the "B" five from contention in the quarter-finals of the pre-season event.

Bill McHorney On ARA Staff

W. R. "Bill" McHorney, a veteran San Diego and Astro sports figure, has joined the staff of Astronautics Recreation Association as a special assistant to Ray Mendoza, employee services supervisor.

McHorney will devote considerable time in helping administer ARA's popular intramural program, including golf, bowling, softball, basketball, etc. He will also assist ARA Council members in operating their activities.

"Our intramural program has grown to a point professional help is needed to produce maximum results," Mendoza said. "McHorney will supplement the already fine job being done by our volunteer leaders."

One of McHorney's first official duties will be to serve as tournament chairman for ARA's annual bowling tournament, largest athletic event staged each year.

With Astro (Dept. 526-3) for over seven years, McHorney has been active in ARA tennis, golf, bowling, etc., and currently serves as tennis commissioner.

A graduate of San Diego State College, McHorney competed in golf and tennis, as well as intramural activities. While serving in the U. S. Army he was a ranked player in an all-service tennis squad.

Club Installs Dee Stivers

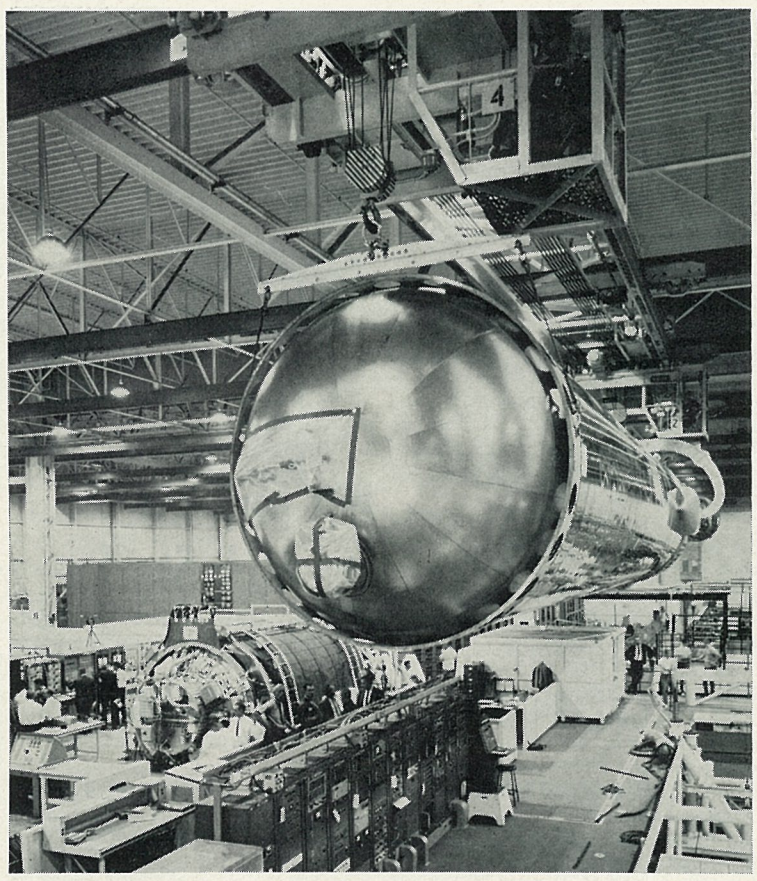
Annual installation of officers of the Serra Mesa Toastmistress Club was held Jan. 11 in the Pool View Room, El Cortez Hotel.

Dee Stivers (Air Force auditor general office) is the new president. Vice president is Scarlett Smith (Dept. 190-0). Secretary is Irma Gilbert, wife of Lt. Col. V. V. Gilbert of the auditor general office. Treasurer is Beth Underkofler of the USAFPR office.

Installing officer was Sunny Dark, AFPR office and chairman of Council Seven, International Toastmistress Clubs. Helen Husseman (Dept. 193) is retiring president.

The Serra Mesa Club meets the first and third Monday of each month, 7:30 p.m., at ARA Clubhouse. New members are welcome.

INSTALLED — New officers of Serra Mesa Toastmistress Club are shown at recent installation. From left, they are, Irma Gilbert, secretary; Scarlett Smith, vice president; Dee Stivers, president; and Beth Underkofler, treasurer. Club meets first and third Mondays, ARA Clubhouse.



SPACE MATES — Overhead cranes at GD/Astronautics move Atlas launch vehicle, modified to boost Centaur stage (lower left) into orbit, toward handling trailer. Atlas departed for Cape Kennedy Jan. 17 and will be followed shortly by Centaur vehicle, now in final testing. Combination will become AC-3, third in eight planned research and development flights to refine Centaur to operational status.

Atlas Slated For Centaur Mating Departs For Cape Kennedy by Air

First Atlas launch vehicle for use in Centaur development to be airlifted coast-to-coast departed San Diego for Cape Kennedy, Jan. 17.

Previously, such vehicles were shipped via truck. This was necessary pending completion of a transport trailer that could handle such vehicles and still fit within a C-133B aircraft, traditional Atlas transporter.

(Atlas vehicles slated for use with Centaur are built without the usual tapered forward end and thus require special trailers.)

Meanwhile, the Centaur portion of this space-probing combination is going through final testing prior to being shipped to Florida. On arrival, it will be mated to an Atlas already installed at the launch site.

To be known as AC-3 (Atlas-Centaur Three), the combination is to become the third in a series of eight research and development launches to refine Centaur to operational status.

The last experimental Atlas-Centaur launch (AC-2 launched Nov. 27) resulted in a highly successful flight with the Centaur vehicle continuing to circle the earth in an orbit that may continue some 200 years.

Atlas Missile With Project Mercury Capsule Will Be Seen at New York World's Fair

Work was well under way this month at GD/Astronautics, preparing an Atlas space booster for exhibit in a Department of Defense display at the New York World's Fair, April through October, this year and next.

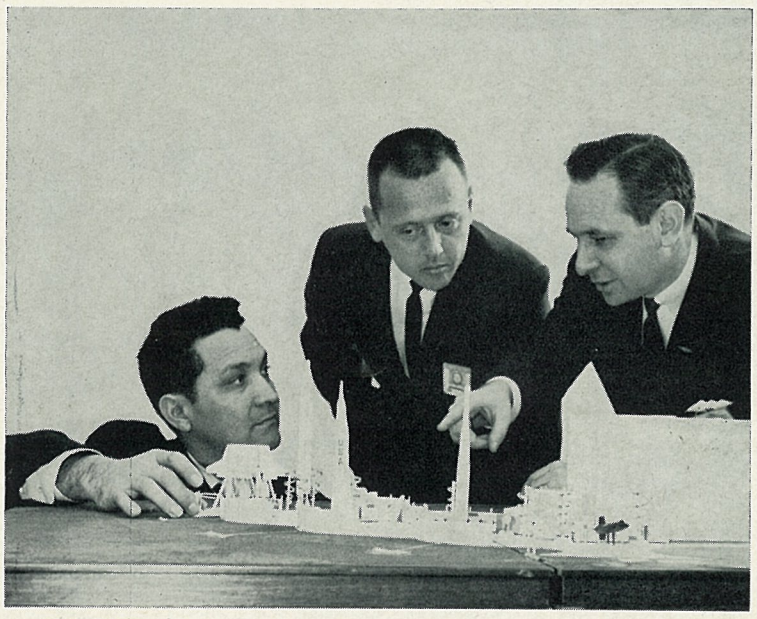
Visiting GD/Astro were two Air Force officers, Lt. Col. Hector Santa Ana and Lt. Col. Michael Orlando, assigned to the DOD project office, for display liaison.

An Atlas, prepared similarly to the one erected in the ARA Area, will feature prominently in the exhibit. It will be in Project Mercury configuration, with a capsule (supplied by NASA's Manned Space Flight Center, Houston) mounted atop the "bird."

In position, the Atlas will be surrounded by countdown panels and a separate Mercury capsule will be shown near by.

W. P. Shine, Dept. 374-3, is coordinating preparation of the display missile, assisted by D. C. McCarthy, Dept. 110-0; Bill McGaw, Dept. 120, and others.

Remember: Wide Area Telephone Service is NOT a free service! Each call costs money.



FOR DISPLAY — Air Force Lt. Col. Hector Santa Ana, left, and Lt. Col. Michael Orlando, right, point out prominent position Atlas missile will take in World's Fair exhibit of aerospace capability, to GD/Astro's Don McCarthy, Dept. 110. Division will prepare missile in manner similar to that used for Atlas in ARA Area.

FAA Will Use GD/E Displays

Display tubes produced by General Dynamics/Electronics at San Diego will be used in a new Federal Aviation Agency air traffic control radar system.

The new system is the heart of FAA's recently-commissioned Great Falls Air Route Traffic Control Center at Malmstrom Air Force Base, Mont., co-located at the Air Defense Command's Great Falls SAGE (Semi-Automatic Ground Environment) Direction Center.

The FAA center will make joint use of ADC's operational facilities and equipment to provide air traffic control service to civil and military aircraft operating in some 135,000 square miles of air space over Montana and the western half of North Dakota.

Information on air traffic control received from radar and other sources will be displayed on the CHARACTRON[R] Shaped Beam Tubes, provided by GD/Electronics, to give a detailed picture of aircraft flying through the sectors.

The CHARACTRON tube is an improved version of a display tube originally developed for SAGE.

Gen. Dynamics Director Dies

Ellsworth C. Alvord, a member of the board of directors of General Dynamics Corporation, died Jan. 16 in Palm Beach, Fla.

Alvord was a partner of the Washington, D. C., law firm, Alvord and Alvord, which for many years has served as special counsel for General Dynamics. Alvord became director of General Dynamics in 1954 when Convair was merged into the corporation.

E. C. Alvord

He was born in Washburn, Wis., in 1895; received his AB degree from the University of Wisconsin in 1917 and his degree in law from Columbia University Law School in 1921. He was admitted to the New York bar the same year.

He served as assistant legislative counsel of the U. S. Senate from 1921 to 1924 and of the House of Representatives from 1924 to 1926. For the next four years he was special assistant to the Secretary of the Treasury.

He served as chairman and vice chairman of various taxation committees of the International Chamber of Commerce, was general tax counsel of the American Mining Congress, and author of a book and articles on taxation.

Third Garuda 990A Leaves

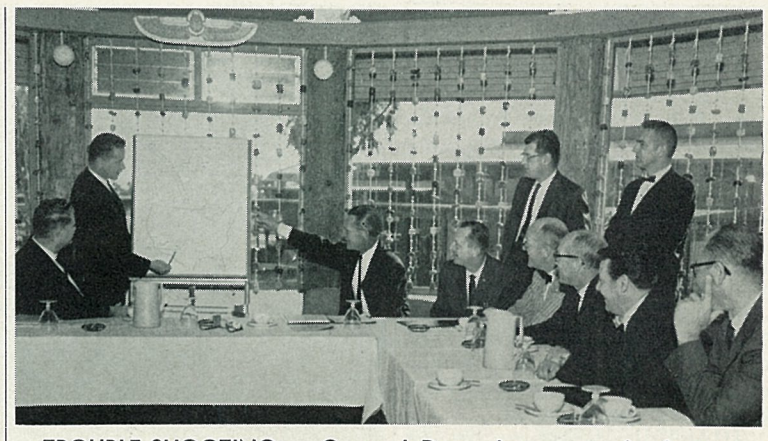
Third and last Convair 990A jetliner to go to Garuda Indonesian Airways was due to leave the San Diego plant last Saturday on its transoceanic flight to Djakarta.

Aboard were W. R. Bruce, director of operations, representing the company on the delivery flight, and R. K. Hall of customer service, who is making a maintenance service visit to Garuda.

Convair flight crewmen were Sherman Johnson, pilot, and Joe Coil, flight engineer.

Garuda personnel were Soejono and Lumanauw, both captains; H. W. Campbell and Suwarno, navigators; and Dudung, who had been at the Convair plant as a Garuda inspector.

J. Thetekdjoe, Garuda's customer representative at Convair throughout preparation and delivery of the three 990As, intends to remain in the United States for awhile for further visits with General Electric Co. and Convair before returning to his home country.



TROUBLE-SHOOTING — General Dynamics communications men meeting with phone company representatives in San Diego to thresh out common problems are, from left: R. H. Williams, Convair; James E. Eyre of AT&T Co.; G. R. Stewart of Pacific Telephone Co.; John B. Gosman, Pomona; J. G. Godfrey and R. W. Kleinhans of Astronautics; T. A. Anelli, General Atomic; and (standing) A. E. Degler of Electronics - SD; Vic Janusz of Convair.

Communicators Confer On Mutual Headaches

Communications specialists from five General Dynamics divisions were hosted by the American Telephone and Telegraph Co. and Pacific Telephone Co. at a one-day meet in San Diego the middle of this month to consider mutual telephone problems and solutions; activities and policies of the phone companies.

Budget control was the main topic as eight GD delegates exchanged ideas on reduction of phone expense within their respective divisions. Pomona's John B. Gosma and J. F. Dacolias startled the group by describing the savings to that division during the last three months, when no office moves of consequence have been possible with the local telephone company on strike.

According to their report, the enforced "stay put" status has revealed that much shifting of desks, and consequently, phones, is non-essential and can be eliminated at a great saving.

Other cost problems, common to all divisions, include control of long distance calls, use of company phones for personal calls, and length of calls.

Discussion disclosed that all plants are plagued by indiscriminate use of company phones for non-business calls, especially the so-called "short haul" calls within distances of only 10 or 15 miles, but which run into thousands of dollars a month.

Average length of regular long-distance calls, 10-11 minutes, should be cut in half, was the unanimous opinion.

A questionnaire to determine need for special circuits between specific points will be formulated for use of GD divisions following adoption of a suggestion of R. H. Williams, Convair communications coordinator.

Pacific Telephone's major account manager, G. R. Stewart, who is assigned to General Dynamics divisions in the San Diego area, outlined that company's organization and plans for the year.

New and existing equipment and systems, which might prove technically and economically useful to General Dynamics divisions, were outlined by James E. Eyre, San Diego representative for AT&T Co.

GD men at the sessions were: Williams and Vic Janusz of Convair; R. W. Kleinhans and J. G. Godfrey of Astronautics; A. E. Degler of Electronics-San Diego; T. A. Anelli of General Atomic; and Gosma and Dacolias of Pomona.

Next such meeting will be held in May with Fort Worth representatives expected.

Fort Worth Couple Hikes Four Miles Through Record Snow to Get to Work

Neither sleet nor a 12-inch snow — heaviest in Fort Worth's history — could keep the Pierces from their posts Jan. 16.

Dotty Pierce, a Dept. 187-2 steno at GD/Fort Worth, and husband Bob, Dept. 21-1, hiked over four miles to work after their car became snowbound.

The couple left their home at 7:30 a.m. and arrived at the plant at 9:10 a.m. Bob was dressed "as usual," but Dotty donned—among other things—capri pants, skirt, a teen-ager's sweatshirt and loafers for the trudge through the foot-deep snow. Other employees came attired in everything from combat boots to ski suits.

Most other GD/Fort Worth employees made it to work, albeit in a more conventional manner, but a lot of automobiles were stranded and a number got stuck in parking places.

Regular airplane-moving tractors and 20,000-pound maintainer trucks—normally used to level roads—were called on to clear snow and ice from Grant's Lane and other regularly traveled ways around the GD/FW plant.

SNOW IN TEXAS — Near GD/Fort Worth plant, Linda King, GD/FW Dept. 24-6, is shown in Texas boots she wore during record snowfall. Many hiked to work when autos stalled. One couple, Dotty and Bob Pierce, plowed afoot 4 miles through foot-deep snow on Jan. 16.

GD

ASTRONAUTICS EDITION

GENERAL DYNAMICS NEWS

Vol. 17, No. 4 PUBLISHED BY GENERAL DYNAMICS CORPORATION Wednesday, February 12, 1964

JOURNEY'S START—In top photo, Atlas 199-D, destined to be 200th Atlas launched, leaves home plant in San Diego bound for Cape Kennedy and gets send-off from C. S. Ames, left, vice president and program director-SLV, and Ronald Rovenger, NASA field office head at Astronautics. In lower picture, shown in Complex 12 blockhouse, are key men in flight to moon launch. From left, Bill Phillipp, asst. test conductor, Ken Taylor, Complex 12 foreman, Orion H. Reed, test conductor, Gene Gilmore, asst. test conductor.

Astro's Atlas Faultless on 200th Flight

The 200th Atlas flight last month was made by Atlas 199-D which roared skyward from Cape Kennedy at 10:39 a.m. (EST) on Jan. 30, carrying an Agena B second stage and moon-bound Ranger A.

Atlas successfully achieved its prime objective: to deliver the combination to a pre-determined attitude, velocity and position in space, so that after separation Agena could boost the spacecraft onto its final flight path.

As it stood on the Complex 12 launch stand before flight, the combination of Atlas, Agena and Ranger was a towering 104-feet high. Atlas 199-D—71 feet, 10 inches of the total height—was of the special variety designed for use in the Ranger program, with heavier stainless steel toward its nose to accommodate the weight of Agena and the 804-lb. Ranger. Its booster engine thrust chambers had baffled injectors for smoother combustion, and did not require an extended hold-down on the launch pad after ignition.

Key GD/Astro personnel associated with the space launch program, including C. S. Ames, vice president and program director—SLV, were on hand at Cape Kennedy for the launch.

Test conductor was Orion H. Reed, a veteran of 19 launches, including the 100th Atlas flight from Atlantic Missile Range which sent the Mariner II spacecraft on a Venus fly-by mission.

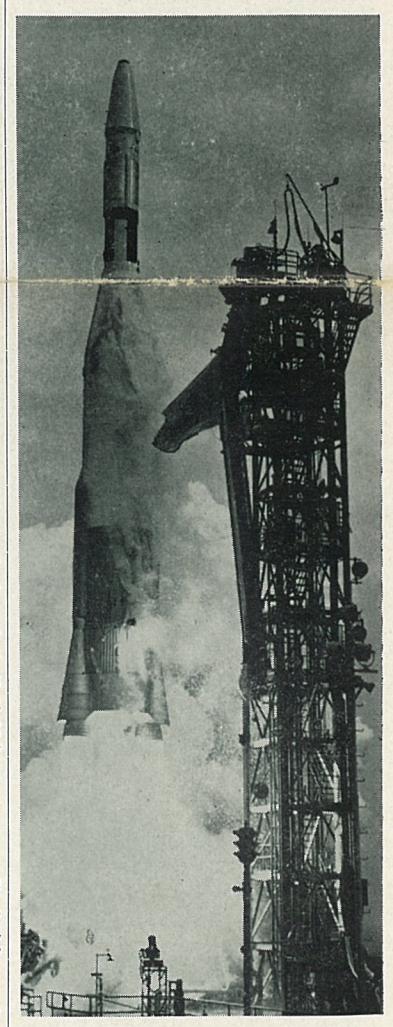
Assistant test conductor for Atlas was Bill Phillipp, whose experience on 45 Atlas launches includes the first ICBM launch, Atlas 4-A on June 11, 1957.

Gene Gilmore, who had also participated in that Atlas milestone, is a veteran of 20 Atlas flights, and served as assistant test conductor for all Complex 12 systems during the launch of 199-D.

Ken Taylor, Complex 12 foreman, directed GD/Astro technicians assigned to operation and checkout of the Atlas launch support facilities, and had assisted with the first Atlas launch.

GD/Astro launched Atlas 199-D under direction of NASA's Goddard Space Flight Control Center, Field Projects Branch at Cape Kennedy. Launch management direction was provided by NASA's Lewis Research Center which holds technical management responsibility for the Agena development program.

K. E. Newton is GD/Astro director of launch operations at AMR, reporting to B. G. MacNabb, director of test engineering. Manager of AMR launch operations is T. J. O'Malley.



TWO HUNDREDTH — Atlas 199-D lifts from Cape Kennedy Launch Complex 12 in historic 200th flight of nation's first operational ICBM and space launch vehicle.

Engineers Institute Elects W. J. Stanley

W. J. Stanley, Astronautics manager of plant engineering, has been elected a vice president in the American Institute of Plant Engineers.

Election came during the Jan. 26 directors' meeting at Cleveland.

Stanley will represent Region 6, made up of 10 western states. Among 1964-65 goals set are better understanding and implementation of value engineering in the plant engineering field.

'E'-'F' Checkout Facility Ready, Beats Schedule

NORTON AFB — Ahead-of-schedule completion of a unique Atlas weapon system checkout facility has been revealed here.

Now operating as a part of the San Bernardino Air Materiel Area (SBAMA) Maintenance Depot, the new facility is the first single Air Force installation capable of performing checkout on both series "E" and "F" Atlas systems.

GD/Astronautics provided the task force making the installation, completing the work more than three weeks ahead of schedule!

Early completion under a time-phased, incentive-type contract meant saving many Air Force dollars.

SBAMA is the Air Force's prime depot for Atlas. It provides direct support and service to Strategic Air Command units manning operational Atlas facilities. The addition of the checkout facility further enhances its modification and support role for Atlas, its aerospace ground equipment and select spares program.

Col. Brunow W. Feiling is SBAMA director of maintenance. Among key men involved in this program was SBAMA's Lloyd Uggla.

George M. Esslinger was Astro's on-site supervisor, working

(Continued on Page 2)

United Fund Honors Astro's Altus Group

ALTUS AFB — GD/Astronautics employees here in Dept. 391 have received a special gold plaque for their recent Con-Trib-Club donation to the Jackson County United Fund.

The plaque was one of seven presented locally to Altus, Okla., firms whose contributions represented virtually 100 per cent of their employees giving "one fair share," or approximately a day's pay to the drive.

A. C. Widmark, Astro chief of industrial relations, accepted the plaque on behalf of all Altus AFB Con-Trib-Club members.

Forty Attending Value Seminar

GD/Astronautics' swelling ranks of value engineering graduates will be boosted again this month by 40 new participants in VE seminar 2-64 which opened Monday (Feb. 10).

In addition, a VE "fringe benefit" is offered to salaried employees and supervision who have been invited to visit the seminar's Vendor Day open house, 1 to 4 p.m., Friday (Feb. 14) in ARA Clubhouse.

Arranged by R. N. Babcock, Dept. 860-0, this event will feature 20 specialty suppliers from throughout Southern California, who will set up displays and discuss their products with seminar personnel and visitors.

Shuttle-bus service between the main plant and the materials building (92) will stop at ARA Clubhouse for convenience of those attending the open house. More information on the vendor program is available from Babcock, ext. 1047, or Earl Hixon, ext. 1470.

(Continued on Page 2)

More Space Missions Are Ahead For Atlas

When Atlas 199-D sent the Ranger A spacecraft on its way to the moon last month, it marked the 200th flight of the space-age classic created by General Dynamics/Astronautics.

In the short years since its maiden flight in 1957, Atlas has done job after job with astounding reliability.

Sometimes this meant "flexing its muscles" as the Atlas Weapon System (AWS), holder of the world's record for the longest on-target flight of an inter-continental ballistic missile (9,054 miles). On other occasions, in its Space Launch Vehicle (SLV) configuration as for Ranger, it was called upon to hammer back the veil of space to the very doorstep of the universe.

But even with the milestone of its 200th flight behind it, Atlas is no retiring work horse. Reliability, versatility and prospects for even heightened performance, have assured that it will be used throughout the 1960s for more space missions than ever before by both the Space Systems Divisions of Air Force Systems Command, and the National Aeronautics and Space Administration.

GD/Astronautics President J.

(Continued on Page 3)

Astro Wives Club To Meet at Lunch

Astro Wives' Club will hold its monthly luncheon meeting Feb. 19 at OceanHouse, with Helen Johnston, 277-2308, now accepting reservations from all interested Astro wives.

A social hour will begin at 11:30 a.m., and following the 12:30 luncheon, Arthur Ellis of San Diego Gas and Electric Co., will present a film and recipes concerned with the art of French cooking.

Log Book Entries

Service Emblems

Service emblems due during the period Feb. 1 through Feb. 15.

Thirty-year: Dept. 759-0, N. L. Wire.

Twenty-year: Dept. 101-2, R. C. Paulsen; Dept. 130-0, R. E. King; Dept. 330-2, K. E. Bradley Jr.; Dept. 759-0, W. C. Litten; Dept. 780-0, A. E. Hill; Dept. 835-1, C. A. Walling; Dept. 975-3, P. A. Christenson; Dept. 977-2, Tom Jones.

Fifteen-year: Dept. 387-3, B. H. Hill; Dept. 403-3, L. A. McCurry; Dept. 523-1, A. F. Burns; Dept. 957-3, F. C. Martin.

Ten-year: Dept. 130-1, S. J. Ahles; Dept. 140-1, W. R. Nicklaus; Dept. 141-2, E. R. Cornell; Dept. 142-5, J. C. Watt; Dept. 195-0, F. W. Klerekoper; Dept. 374-3, J. F. Eulette; Dept. 387-3, A. D. Branch; Dept. 401-2, Harold Humes Jr.; Dept. 404-1, E. W. Montgomery; Dept. 526-9, D. N. Wells; Dept. 567-3, R. F. Diederich; Dept. 641-1, O. H. Johnson; Dept. 652-2, T. R. Bullock; Dept. 682-2, Reuben Leydens; Dept. 684-4, E. M. Kops; Dept. 731-0, W. O. Tyler; Dept. 833-1, Raymond Moore; Dept. 952-3, P. D. Adams; Dept. 972-0, Shirley M. Elson; L. E. Homer; Dept. 989-4, J. H. McKim.

Deaths

MAIN PLANT

BROWN—Wilfrid J., Dept. 423-1. Died Feb. 1. Survived by wife, Nina.

DRAPER—Florence, Dept. 524-1. Died Jan. 28. Survived by husband, Kenneth W. Draper (Dept. 835-4); son, daughter.

SPENCER—Roy, Dept. 758. Died Jan. 23. Survived by wife, Ruth; son.

WARNER—Charles S., Dept. 210. Died Jan. 30. Survived by wife, Herta Ruth Warner (Dept. 141-2); two sons, two daughters.

ROBERTS—Claude O., contacts manager of administrative support, Dept. 110-0. Died Feb. 4, Survived by wife, Lois; two daughters.

PLATTSBURGH AFB

KORCZYKOWSKI — Frank B., Dept. 394-2. Died Feb. 5. Survived by wife, Helen.

Births

HERLICH—Daughter, Katherine Ann, 6 lbs. 3 oz., born Jan. 21 to Mr. and Mrs. Gilbert A. Herlich Jr., Dept. 032-2.

JAMRUS—Son, Brian John, 7 lbs., 4 oz., born Jan. 26 to Mr. and Mrs. K. J. Jamrus, Dept. 652-5.

RUSKIN—Son, Daniel Barton, 7 lbs., 13 oz., born Jan. 13 to Mr. and Mrs. Arrnold P. Ruskin, Dept. 642-2.

Retirements

HIGDON—John O., Dept. 142-1. Seniority date, Nov. 21, 1955. Retired Dec. 1, 1963.

Personals

The family of Robert Steele (Dept. 148) wishes to express its deep gratitude to his friends and co-workers at GD/Convair, GD/Astro and all the off-site bases, who have shown their love and respect in so many ways during the past days.

Mrs. Betty Steele
Kathy, Pat and Tom.

* * *

We wish to express sincere appreciation for the many kindnesses shown us at the death of James L. Davis, Dept. 759.

Hazel Davis
Jimmy Estes and family.

* * *

Thank you very much for all the kindness you have shown, and for the sympathy expressed on the death of Robert B. Cort, Dept. 811-1.

Mrs. R. B. Cort
and son, Gary.

Official Notices

UTILITY SHUTDOWN

Electrical service will be shut down in certain main plant areas between 12:01 a.m., Feb. 22 and 12:01 a.m., Feb. 24, during substation exchange.

Affected are Bldgs. 13, 14, 15, 17, 28 and 30; as well as the life sciences and electronic research wing (Cols. Z/AD-10 through 35) and the data processing wing (Cols. A/1-19 through AG/1-19) in Bldg. 4

Telephone service will be maintained with emergency power.

D. E. Merriam, supervisor
Plant Engineering (Dept. 250-2)

AND THANKS—Astronautics-installed checkout facility for "E" and "F" series Atlas systems at Norton AFB was completed three weeks ahead of schedule. Signing off are Astro's Jim Trail, left, and William Patrick of Air Force Systems Command. Standing, from left, are Frank Farnsworth (Astro), John Ruggerio (AFSC), Col. Brunow W. Feiling, SBAMA director of maintenance, George Esslinger (Astro on-site supervisor), and James R. Healy (SBAMA).

'E'-'F' Checkout Facility Ready, Beats Schedule

(Continued from Page 1)

under direction of R. G. Daly, chief of support field modification, and E. J. Huntsman, manager of activation and support. A full-time force of approximately 30 men remained at Norton AFB throughout the program (mid-November to mid-January), while as many as 45 men were on hand for specific periods and assignments. Personnel came from many engineering and operations functions, including goodly numbers from activation and support, Point Loma and Sycamore Canyon test sites.

An unusual feature of the program involved equipment installed. Some came directly from Astro on special order, while some was selected from available material on hand here at SBAMA. Tools for the tasks also came from both locations, with SBAMA filling specific requirements quickly and adequately.

Esslinger called SBAMA support and cooperation "outstanding."

Col. Freiling lauded Astronautics personnel for "a very harmonious working relationship; a no-accident safety record; a smoothly coordinated effort; and workmanship of the highest quality."

Equipment which could be used on both "E" and "F" "birds" was installed with minor modifications. Due to the difference in some systems, other equipment had to be set up for use dependent upon the series "bird" being checked out. However, even these units were made to hook into the overall system rapidly and with a minimum of effort.

SBAMA was especially pleased with the opportunity of having its personnel (now operating the facility) on hand at all times to observe actual installation and checkout operations.

"This experience will be extremely valuable in our operation of the facility," Col. Freiling said.

Forty Attending Value Seminar

(Continued from Page 1)

Seminar 2-64 is the second in a one-a-month series scheduled for GD/Astro during the year. They are conducted by educational services section of industrial relations, in cooperation with the division's cost reduction and value control organization under Manager E. D. Heller. Everett Lindem, Dept. 130-3, is seminar coordinator.

Top-level impetus for seminar 2-64 participants was provided by GD/Astro President J. R. Dempsey who delivered the program's keynote address Monday.

This week and next, seminar sessions will be held daily from 8 a.m. until noon. Team members and projects scheduled are:

Team #1—Junction box assembly pod. R. W. Billmire, Dept. 250-2; A. Kirinich, Dept. 780-1; E. A. Littlefield, Dept. 373-9; D. E. McMurtrey, Dept. 405-1; W. H. Paine, Dept. 557-2. Project leader, M. W. Young.

Team #2 — Manometer housing CAP assembly. H. E. Catlin, Dept. 661-7; A. Roberts, Dept. 404-1; G. L. Self, Dept. 380-6; F. Virgadamo, Dept. 147-2; M. C. Bayer, Dept. 558-5. Project leader, Young.

Team #3—Brace. W. E. Ladd, Dept. 403-3; A. H. Lakritz, Dept. 149-0; J. M. Leland, Dept. 662-8; R. K. Jeffries, Dept. 190-0; F. L. Strickling, Dept. 373-7. Project leader, J. B. Jessop.

Team #4—LOX topping flow tee. N. S. Bernard, Dept. 700-0; E. D. Melton, Dept. 959-1; W. Nugent, Dept. 528-3; W. R. Skinner, Dept. 020-0; D. D. Sturhann, Dept. 250-2. Project leader, Jessop.

Team #5 — Transducer LO2 sensing probe. L. C. Albright, Dept. 671-1; C. A. Clemente, Dept. 405-1; E. F. Schraith, Dept. 549-6; C. J. Tait; D. M. Whitney, Dept. 403-3. Project leader, Ward Willcutt.

Team #6—Control unit power signal RSC. H. D. Brown, Dept. 780-3; B. K. Gingery, Dept. 382-1; R. Morin, Dept. 374-1; K. S. Telfer, Dept. 661-4; H. T. Sicard, Dept. 130-3. Project leader, Willcutt.

Team #7 — Tube assembly, Jettison track. R. Dittmer, Dept. 547-3; L. I. Fredrickson, Dept. 140-1; L. P. Raper, Dept. 404-1; D. A. Robinson, Dept. 250-2; A. L. Schuler, Dept. 528-2. Project leader, Wally Seaforth.

Team #8—Pod door latch assembly. H. Buehner, Dept. 662-3; P. E. Daniels, Dept. 812-2; A. Rohr, Dept. 403-3; C. L. McKnight, Dept. 651-1; W. Pfefferle, Dept. 250-2. Project leader, Seaforth.

Blood Help Sought For Ex-Employee

Employees of GD/Astro Dept. 312 (customer service operational manuals), are spearheading an effort to solicit blood donors to benefit a former employee whose 14-month-old daughter must undergo open heart surgery today (Feb. 12).

Pamela Sites, whose mother, Mrs. Joan Sites, is a former Dept. 312 employee, will require 40 pints of blood during her operation, and since her mother is terminated, GD/Astro's blood bank arrangement is not applicable.

Donors are urged to contact San Diego Blood Bank (296-6396), and may arrange to credit donations to Pamela's account any time within 90 days following the operation.

GD/Astro Daughter Is 'Belle of the Ball'

A GD/Astro daughter was literally "Belle of the Ball" when she was named to that title at San Diego State College's Blue Book Ball recently.

Stephanie Smith, 18, whose father, Elbert B. Smith is in GD/Astro Dept. 954-2, was selected for the title by vote of students attending.

Shipping, Receiving, Inspection Consolidation to Save Big Sum

Among noteworthy cost reducing operations carried out at General Dynamics/Astronautics since the first of the year is a consolidation of all shipping, receiving, traffic and receiving inspection functions.

This move is expected to save more than $106,000 per year in direct costs. In addition, some 22,600 square feet of space (estimated to cost about $33,000 yearly) and approximately $10,000 worth of office and shop equipment (including 20 telephone lines) will be available for reassignment. The latter will help fill 1964 capital budget requests.

In brief, consolidation eliminated duplicate functions.

That is, duplicate operations performed at Plant 19 have been phased into "parent" operations within the main plant complex—receiving and receiving inspection at Plant 71; shipping and traffic in the materials building (92).

Astronautics set up duplicate functions in late 1959 to handle a growing volume of spares business. At that time spare allocations (spares stocked, received and shipped) were in excess of 42,000 items. During activation and subsequent updating of operational Atlas facilities, plus establishment of depot stocks, the volume of spares processed made duplicate functions economically feasible. Completion of major tasks has reduced this volume about 90 per cent (to 3,800 spares allocations).

"Relocation resulted in a few minor inconveniences, although the anticipated savings and improved efficiency far outweighed the problems," said J. N. McPheeters, chief of material stores and traffic.

Operations planning and methods department and plant engineering, working closely with all affected functions and departments, has smoothed over many problem areas with special arrangements.

For instance, railroad car or truckload lots of materials may be dispatched directly to Plant 19 for handling, if necessary. Items too massive or heavy for routine transportation between points will be packaged or crated at Plant 19. Shipping will provide locked boxes to maintain accountability as well as padded shipping containers for "delicate" or easily-damaged items. Spares will be handled separately to avoid co-mingling with production material.

Designated personnel will flag and follow up on priority materials and a special "hot" truck will be available to handle priority items.

Although absorbing additional work loads, the shipping, traffic, receiving and receiving inspection "parent" groups have required little additional space or equipment.

This feat, too, was possible by careful planning with an eye to reducing operating costs.

'Do Good Work' Data Tallied

Results in GD/Astronautics' "Do Good Work" program are in final stages of computation this week, with 13 departments competing for first month honors in the division-wide program.

Winner of the initial contest, selected on the basis of quality reports for November, December and January, will be announced at President J. R. Dempsey's monthly management meeting Feb. 26. Competing are Depts. 382, 454, 673, 714, 715, 718, 723, 731, 732, 733, 759, 780 and 972.

Since the program was announced late last year, enthusiasm for it has grown rapidly, and similar competitions for Vandenberg AFB and Cape Kennedy are now under study.

Additionally, some of GD/Astro's major suppliers have expressed interest in establishing comparable programs within their firms.

Astro Son Appears On 'Dropout' Show

A GD/Astro son, John Herring, 16, whose father C. L. Herring, is in Dept. 195-0, recently appeared in a local television production, "The Losers," spotlighting the plight of the high school drop-out.

John, a student at San Diego High School, is taking the lead role in a current school production, and is an 8-year veteran of San Diego Junior Theater. He had taken part in the Shakespeare Festival for three years, as well as working with State College Musical Comedy Guild and at Circle Arts Theater.

He plans a college major in dramatic arts.

Astro Leaves Rose Canyon

General Dynamics/Astronautics last week completed transfer of its entire work force assigned to Rose Canyon to new quarters at Plant 19.

The move was part of a division-wide cost reduction campaign as well as an effort to increase operating efficiency through consolidation.

Dollar savings are expected to exceed $160,000 per year. They represent not only facility rentals, but also such factors as maintenance, telephone switchboard service, bus service between the facility and other Astro sites and the resulting cost of employee travel time, security, etc.

Involved were employees in Astro's service parts organization of customer service department. They are now "at home" in new quarters on the first "B-C" cross mezzanine and the first "C" mezzanine of Bldg. 3, Plant 19.

Former occupants of this area, the trainer design group of the same department, have been consolidated into customer service functions quartered in Bldg. 19 at GD/Convair.

In this relocation, plus subsequent relocations planned throughout 1964, cost reduction will be a major consideration.

Beltless Cars Will Be Tagged

This week and in weeks ahead brief, but important, notes will be placed in or on certain automobiles using GD/Astronautics parking lots.

Cars tagged will have one thing in common—they are not equipped with seat belts.

Safety engineers will cover all lots, compiling unofficial records on the number of cars with and without seat belts and placing notes only on those without.

Signed by J. W. Garrison, chief safety engineer, the notes merely call the owners' attention to the tremendous reduction in injuries and deaths directly attributed to the use of seat belts. They will also point out that California law will soon make the use of seat belts mandatory. More important, they inform drivers that seat belts may be obtained through Astro safety cribs at greatly reduced rates (less than $3 per belt) either for cash or through the payroll deduction plan.

"We do not consider this effort an invasion of privacy, but merely a means of presenting certain facts and making known an important service available to all employees," Garrison said. "The individual retains his right to take action."

General Dynamics NEWS

Published by General Dynamics Corporation, One Rockefeller Plaza, New York 20, N. Y.; with editorial headquarters at 3302 Pacific Highway, San Diego 12, Calif., P.O. Box 1950, telephone 296-6611, ext. 1071. Logan Jenkins, editor-in-chief.

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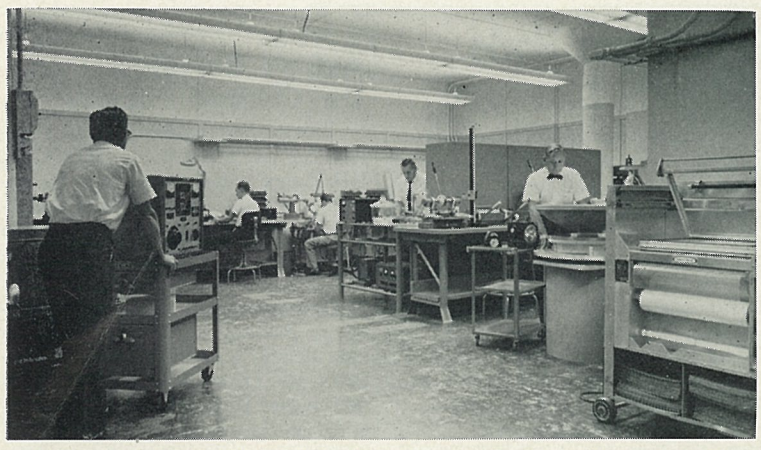
Affiliated editions of General Dynamics NEWS are published in Rochester, N. Y., covering GD/Electronics and Stromberg-Carlson, editorial offices, 100 Carlson Road, HUbbard 2-2200, ext. 2555. Fred E. Voss, editor; and at Groton, Conn., covering GD/Electric Boat, editorial offices at Groton, HIlltop 5-4321, ext. 300 and 513, Joseph Tracey, editor.



DEVELOPING TECHNIQUE—This is overall view of new GD/Electronics manufacturing development laboratory at San Diego, used to prove out advanced techniques and originate others.

GD/E Lab Hunts New Methods In Race to Retain Leadership

Development phases are getting under way in GD/Electronics-San Diego's new manufacturing development laboratory which is destined to play an important part in providing the nucleus for new business for that division.

"We can't and won't sit still," was the way George Patrick, GD/E supervisor of advanced methods, expressed it. Patrick is responsible for the laboratory facilities under J. P. Morris, manager of production engineering.

"Manufacturing methods are changing constantly," he continued. "We must continuously explore, survey, and devise new combinations of technology to keep GD/E a leader in the electronic field."

That is the purpose of the GD/E manufacturing development laboratory.

It is defined as a "combination of various specialized equipment which is available to all engineers working on special projects, and which will be used to convert basic sciences of technology into practical manufacturing techniques."

Before any new manufacturing technique is put to use in GD/E operations, it will be put to the test in the manufacturing development laboratory. Cost of the process, its advantages and disadvantages, type and cost of equipment required, number of man-hours necessary will be worked out right down the line in the lab.

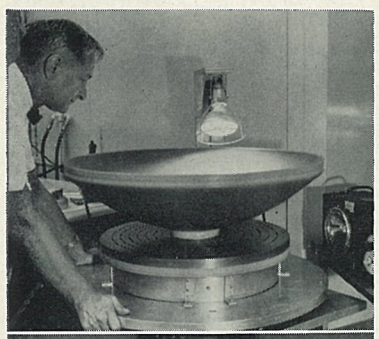
In the short time that the lab has been in operation production engineers already have proved out advanced equipment, made to GD/E's specific needs, which will help keep the San Diego plant ahead of the crowd.

One item of manufacturing equipment, now in use in GD/E Plant 2, was designed by production engineering to secure components to printed circuit boards while they are dipped in solder. A standard vacuum pack machine was modified to skin pack electronic components with plastic so they are held in place during the dipping process.

Now, engineers are taking a good, long look at micro-miniaturization in all its phases, said E. M. Starkweather, supervisor of assembly methods and planning.

They are well into the field—working on the reduction in size of all electronic components to reduce weight and increase function for smaller and more powerful units. Circuits which formerly took up a cubic foot of space now can be contained within scope of a thumbnail. Welding and soldering techniques consequently must keep pace. So, subminiature welding techniques under microscopes are being used in the laboratory. And, in the same area, engineers are attaching subminiature circuits on flexible sub-strata to find ways to get as many circuits as possible in compact areas as they work out applications for future space vehicles.

Other lab projects include investigation of new potting and metal forming techniques; improved methods of handling wires for harnesses and assemblies; and optimum cleaning processes. And, from these studies, GD/E engineers make sure they will evolve the means to keep GD/Electronics-SD abreast and ahead of the "state of the art."



From top down: George Patrick, supervisor of advanced methods, pictured in laboratory; E. M. Starkweather holds 3D welded electronic module; Jack Helton welds module under microscope.

48 Yrs., Never Late Undefeated Champ

Until someone challenges him, which isn't likely, Joseph R. Vella, who retired last month from Stromberg-Carlson, is the undefeated attendance champion of General Dynamics.

He has been with the company nearly 48 years and in that time has never been late and never lost a day to sickness!

"We had to come to work in the early days whether we wanted to or not, and it just got to be a habit," he explained. He was assembly foreman for special phones and relays on retirement.

Navy, GD/E Printing Technique to Cut Cost of Catalogues

A new electronic printing technique, developed jointly by the Navy Publications and Printing Service and General Dynamics/Electronics-San Diego, may cut production costs of printed catalogues as much as 40 per cent, Navy tests indicate.

By the method, which transfers catalogue information from magnetic tape to microfilm pages, information stored in a computer is fed into GD/E's S-C 4020 computer-recorder which can convert the data from magnetic tape to letters, figures, graphs, and charts.

Transfer of information to microfilmed pages (88 lines per page) is done at a speed of 7,000 lines per minute. The new system electronically reduces letter width and white space between printed lines and letters with little or no loss in readability. The microfilm is used to produce black and white page proofs, as well as negatives from which offset printing plates are made.

The Naval Aviation Supply Office, Philadelphia, Pa., applied the technique to printing one section of its stock list catalogue. In the test run, the one section shrank from 28,000 to 16,000 pages. The Navy estimates it saved $68,000 of the normal $141,000 cost of this particular catalogue section.

The test was so successful that future NASO stock list supplements will be printed by the new method.

BROCKIE SPEAKS ON ARBITRATION

D. P. Brockie, FW labor relations administrator, spoke on "Conducting an Arbitration Hearing" at a two-day institute at SMU Feb. 3 and 4. Theme of the institute was "What the Line Foreman Needs to Know About Arbitration."

High Speed Printer System Developed For Reporting Rocket Engine Data

Engineers at GD/Electronics-San Diego and Jet Propulsion Laboratory have combined to design a special high-speed printing system which can print over 10,000 words per second.

The printer, recently installed in the Edwards Air Force Base, Calif., facility of Jet Propulsion Lab, is used to record data received from the testing of rocket engines being developed for deep space applications.

In a matter of seconds, test data which has been recorded on magnetic tape in digital form is converted to high quality characters and printed on paper copy for immediate evaluation. Before this, information could not be available for hours after a rocket engine test. At the Edwards AFB installation, the system operates at a normal printing rate of 20,000 characters per second — but has been operated at speeds up to 71,000 characters per second!

The equipment consists of a modified S-C 3070 Electronic Printer. The heart of the modified printer is a special CHARACTRON[R] shaped beam tube with a fiber optics faceplate which provides a full 8½-inch wide recording surface.

Seven million tiny light pipes, each smaller than a human hair in diameter, are bundled together into the fiber optics faceplate which is embedded in the screen of the special cathode ray tube. The fiber optics plate eliminates need for a conventional lens system and is responsible for the great speed and high quality printing in the system.

The new system was designed to give JPL a low-cost, quick-look device which will print characters at the same rate as they are recorded on magnetic tape.

Higgins Will Head Defense Transport

J. W. Higgins, GD/Astronautics traffic supervisor, has been elected president of San Diego Chapter, National Defense Transportation Association. He was installed Jan. 28.

The local group is made up of some 65 military, industry, carrier and shippers of all types who handle defense items.

Higgins has served two terms as vice president of the group.

More Space Missions Are Ahead For Atlas

(Continued from Page 1)

R. Dempsey said of the Ranger flight, "This 200th launch is simply the gateway for a continuation of Atlas' role as a launch vehicle important to the nation's space goals.

"We are now working under an Air Force contract on a standardized version which will allow even greater versatility and draw upon experience and proven techniques developed with Atlas over the past six years."

On June 11, 1957, Atlas first lifted from a Cape Kennedy launch pad for 50 seconds of flight. Only six months later (Dec. 17, 1957), Atlas 12-A followed, to be termed fully successful.

Another milestone in its career came on Dec. 18, 1958, when Atlas 10-B hurtled itself into orbit with an Army Signal Corps package (Project Score) which broadcast President Eisenhower's Christmas message from space.

Since then Atlas has sent spacecraft on their way to Venus (Mariner), to the far side of the moon (Ranger IV), and boosted four Project Mercury astronauts into space. During 1962, Atlas launched space capsules piloted by John Glenn (Feb. 20), Scott Carpenter (May 24), and Walter Schirra (Oct. 3). On May 15, 1963, Gordon Cooper's flight brought the Mercury program to a successful close, and Atlas' reliability record stood at four-for-four.

Meanwhile, across the nation, Atlas in its AWS versions, was being readied at 11 Air Force bases with a total of 129 launching sites in what has been called the "greatest defense program ever instituted."

And on Nov. 27, 1963, the nation entered the new era of liquid hydrogen propulsion when Atlas lofted GD/Astro's Centaur high-energy space vehicle on a successful flight.

Only six years after its initial flight success, Atlas scored another first on Dec. 18, 1963. Then, for the first time anywhere, three space vehicles of the same kind were launched in one day, and Atlas was star of the "triple-header."

One Out of Ten Attend College On Own Time

An estimated 1,200 employees —roughly one of every 10 at GD/Fort Worth—are enrolled in college and technical courses this semester.

Nearly 375 employees signed up for a record 29 in-plant TCU courses, reports Hoyt Clark Jr., educational services supervisor. And a like number are probably taking courses on various campuses in the area.

Three of the in-plant courses are held for second-shifters.

A "substantial increase" was also noted in the SMU-TCU graduate engineering program, where 176 enrolled. Under a new plan, employees may take the advanced SMU courses at TCU, through a special arrangement between the two schools.

At Technical Institute, about 350 employees signed up for 11 technical classes, including computer programming, slide rule, and blueprint reading.

In addition to "outside" formalized courses, employees are enrolled in a number of in-plant management development courses. And a number are involved in specialized courses leading to competency in various F-111 areas.

43rd Bomb Wing (B-58) Tapped For Top Honor

Carswell Air Force Base's 43rd Bomb Wing has been nominated as the best bombardment wing in the Second Air Force.

If the group receives the honor, it will be eligible for the U. S. Air Force Flying Safety Plaque for 1963, and the Colombian Trophy.

The 43rd, commanded by Col. E. W. "Brick" Holstrom, flew 14,169 hours of routine combat crew training mission without an accident during the past year.

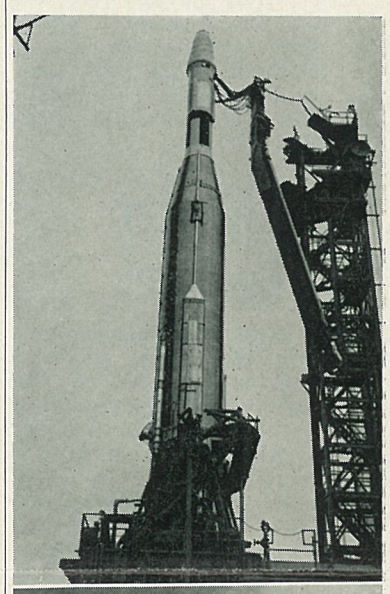
During that time, the 1,400 officers and airmen of the nation's first B-58 wing submitted 291 operational hazard reports. Wing Safety Director Lt. Col. R. E. Erbe said this figure broke all previous records.

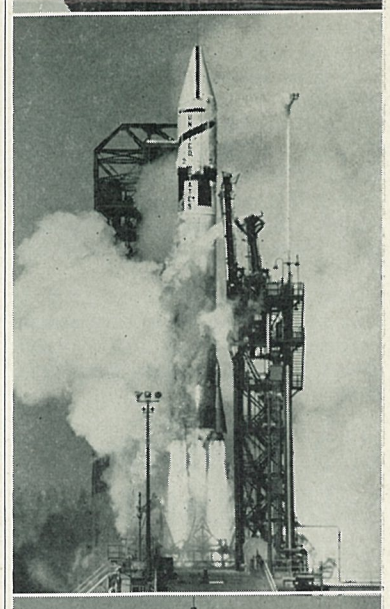
Employment Mgr. Heads Grand Jury

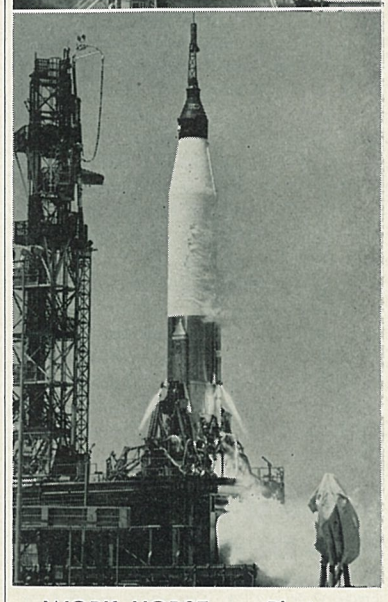
Warren B. Jones Jr., employment manager at GD/Astronautics, has been named foreman of the 1964 San Diego County Grand Jury.

Presiding Superior Court Judge Vincent A. Whelan appointed Jones to the post following recent seating of the grand jury.

A retired Marine Corps major, Jones has been with Astro for the past seven years.







WORK HORSE — Photos review memorable flights of Atlas that recently logged its 200th. At top, Atlas-Agena is shown with Ranger space vehicle aboard; center, Atlas-Centaur lifts from Cape Kennedy in first successful flight of vehicle powered by liquid hydrogen; below, familiar Mercury-Atlas as it started John Glenn on first of four successful Mercury flights.

GD/Astro Cuts Salvage Hours

GD/Astronautics' salvage yard is joining current cost reduction efforts by reducing employee sales hours for surplus materials.

Sales hours will now be observed only one Saturday in each month. Astro's yard was open Feb. 8 and will not be open again until March 7.

This change will have no effect on GD/Convair salvage yard hours for the remainder of this month.

The two yards have observed employee sales hours on alternate Saturdays in the past. Despite curtailment of hours at Astro, both yards will continue to admit all General Dynamics Corporation employees upon presentation of proper identification (badges or "ID" cards).

For those wishing to plan ahead, Astro employee sales hours in 1964 will be observed March 7, April 4, May 2, June 13, July 11, Aug. 8, Sept. 5, Oct. 3, Nov. 14 and Dec. 12.

★ ★ ★

GD/CONVAIR YARD OPEN FEB. 15, 29

GD/Convair salvage yard, adjacent to Gate 5, Plant 1, will be open Saturday mornings, Feb. 15 and 29, from 8 a.m. until noon, for employee sales. No children are allowed on the premises during sales hours.

Four GD Men Will Lecture

Four General Dynamics men are included among lecturers scheduled for the series "Modern Aerospace Design" sponsored by San Diego chapter, National Society of Aerospace Professionals, now meeting Wednesdays, 7 to 9 p.m. in Balboa Park's Aerospace Museum.

They are Romie Taylor, GD/Astro chief of materials and parts engineering, "Design Selection," Feb. 12; Clarence Smith, GD/Convair structures design specialist, "Structural Design," March 4; George Bartolomei, GD/Astro cost reduction and value control staff, "Value Engineering," March 11; and Ed Carlson, GD/Astro engineering staff specialist, "Design Maintenance," April 8.

An enrollment fee of $15 is charged for the 10 lecture series. Information is available from Doug Stephenson, GD/Astro ext. 3769.

C. O. Roberts Dies Suddenly Last Week

Claude O. Roberts, 43, contracts manager of administrative support at GD/Astronautics, succumbed to a heart attack Feb. 4.

Roberts was a long-time General Dynamics employee, joining the company at GD/Convair in 1947 after World War II service as a Naval aviator. He was a Stanford University graduate.

Roberts served as budget supervisor and contract administrator before leaving to accept the post of general sales manager for Langley Corp. He returned to Astro in 1962 as subcontracts administrator and was named contracts manager in January, 1963.

He is survived by his wife, Lois; and daughters, Claudia and Barbara.

Architect to Talk On Layout Trends

William L. Pereira, AIA, an internationally famous architect, will address the San Diego Chapter, American Institute of Plant Engineers, meeting Feb. 19.

Pereira will discuss "Trends in Architecture, Planning, and Industrial Layout."

The affair will be held jointly with the American Institute of Industrial Engineers and the American Institute of Architects.

W. J. Stanley, Astro manager of plant engineering, is president of the engineering group.

Joint Mgt. Club Meeting Set

General Dynamics Management Clubs at Astronautics, Convair, and Electronics will join with other San Diego clubs in a joint meeting the latter part of this month to hear Dr. Kenneth McFarland, a nationally famous speaker.

The special dinner meeting is set for Feb. 25 in El Cortez Hotel's International Room. Social hour starts at 6 p.m., dinner at 7, and program at 8. Tickets now are on sale through usual outlets in the three General Dynamics divisions. Seating capacity is limited to 1,400.

Dr. McFarland is guest lecturer for General Motors Corp., and American Trucking Association. He has been voted "America's Foremost Public Speaker" in a nation-wide poll conducted by the U. S. Chamber of Commerce. He averages 200 talks a year in every part of the country to groups whom he considers "key leaders of the nation."

His subject at the Feb. 25 meeting, sponsored by the San Diego Area Council of NMA, will deal with issues of special concern to management.

Each GD club has been assigned a share of the meeting arrangements by L. G. Lawson of GD/Convair Management Club, general chairman of the program.

GD/Astro's group is in charge of ticket distribution and sales with T. F. McCubbin, chairman. GD/E Management Club is responsible for the drawing and prizes, with Garrett McClung tabbed to conduct the drawing. Rex L. Brouillard is GD/E chairman.

Mgt. Seminars Beginning Soon

Salaried employees at GD/Astro, GD/Convair and GD/E may participate this spring in their choice of four management development seminars to be offered under auspices of GD/Astro Management Club.

Sessions will begin in late February, and will meet weekly from 5 to 7 p.m. Those who register will be notified individually of dates and locations.

Offered are General Principles of Managing (20 hours); Principles of Managing, Technical and Professional (20 hours, and limited to senior engineers and scientists, supervision); Issues in Modern Management (12 hours); and Case Studies, Management Practice and Policy (12 hours).

No charge is made for courses, but textbooks are required in each case. Cost of books is partially refunded on completion of the 20-hour courses; fully refunded on the other two.

Applications are available from Pat Boychock, mail zone 131-80, GD/Astro main plant ext. 3146.

The program is now in its fifth year of operation, with 22 classes conducted simultaneously last fall in General Dynamics plants in the San Diego area.

Additional information is available from George Hunter, Dept. 380-2, Plant 19 ext. 1576.

Sports Club to Hold Championship Rally

Initial plans were announced last week for ARA Sports Car Club's annual championship event, Atlas Rally VI, to be held April 19.

Officials for the event have been named, with Dave Stephens as rally master; Jack Gallant and Dennis Scannell, course layout and scoring; Art Wrightson, check points; Richard John, awards.

ARA Commissioner E. S. "Judge" Penick is handling applications, and Ed Yeaton, publicity.

The club's next meeting will be held at 7:30 p.m., Feb. 18, with a brief business session to be followed by a simple rally, "The Pizza Special." Visitors are welcome.

BEWIGGED — Mrs. J. P. Syren braces herself for transformation as assistant from local coiffeur salon prepares to adorn her with wig during demonstration at GD/Electronics Wives' Club luncheon Jan. 9.

Papers Needed In Symposium

A call is out for papers for presentation at the Ninth Symposium on Ballistic Missile and Space Technology to be held Aug. 12-14 at the U.S. Naval Training Center, San Diego.

The event is sponsored by Space Systems Division and Ballistic Systems Division of Air Force Systems Command.

Papers are welcomed on particular scientific and engineering aspects of ballistic missile and space technology that are pertinent to military applications.

Five copies of an unclassified abstract of not more than 40 words and five copies of the manuscript must be submitted by April 3 to Aerospace Corporation, Attn: 1964 Symposium Chairman, P.O. Box 95085, Los Angeles, Calif. 90045.

Complete details are posted on plant bulletin boards in engineering at Plant 1.

Enrollment Open In Spanish Class

Enrollment is still open for the beginning and intermediate Spanish courses taught by James Hardison, GD/Convair Dept. 15, at Hoover Adult High School.

Although first class sessions of the spring semester were held last week, students may still enter either of the courses by registering at class meetings. Beginning class meets Tuesdays; intermediate, on Thursdays, both in Room 219, 6:30-9:30 p.m.

Discount Is Offered On Colo. River Film

Discount tickets to a Feb. 26 Russ Auditorium showing of a color film on exploring the rapids of the Colorado River are now available through Astro employee services.

Regular $1.50 tickets sell for $1.25.

The film was produced and narrated by Frank Wright, veteran explorer and motion picture photographer who has worked with major studios over the years. He is one of the major authorities on the Colorado River.

Astro's Kurtzman Chairs Club Meet

EDWARDS RS — General Dynamics Antelope Valley Management Club here played host to guests from other aerospace industry firms in the area at a Jan. 10 meeting held in Lancaster.

Guest speaker was Ray J. Stanish, lecturer for the National Management Association. Stanish spoke on "Light Is a Very Dark Subject."

Guests from Air Force, Lockheed and North American units in the area were on hand. Astro's Roy Kurtzman was chairman of the sponsoring committee.

Lunch Hour Movie Subjects Announced

Subjects of importance to all employees are featured in up-coming movies in the lunch hour film series at GD/Astro main plant, Room 3, Bldg. 17, each week, Tuesdays and Thursdays.

On Feb. 13, "Maintainability," dramatizes a typical military maintainability problem, and "You Can Beat the A-Bomb," Feb. 18, shows measures which can save lives in case of nuclear attack.

Another maintainability film, "A Design for Living," emphasizes the need for industrial concern with this subject, Feb. 20. And on Feb. 25, a double-feature, "You and Your Ears," and "Congestive Heart Failure" concentrates on health.

Repeat showings are at 11, 11:30, noon and 12:30 each day.

ARA Explorers Plan Award Night Feb. 19

Awards will be featured at the Feb. 19 meeting of ARA Explorers Club, 7:30 p.m., Feb. 19 in ARA Clubhouse.

Presentations on behalf of ARA will be made by Commissioner Herman Reichert, on a basis of selection by popular vote.

Trophies will recognize the most interesting artifact found on a club field trip during the past 12 months, the most interesting natural find, best black and white photo, best color slide or print, and the best outdoor hint.

Up-coming April 4-5, is a mountaineering trip in which members will drive to the top of El Toro peak, hike down and across a desert floor, and rejoin the main group in Rockhouse Canyon.

Dance Exhibition To Be Presented

An exhibition of the latest teenage dance steps plus Latin-American numbers will be presented by a local dance studio team at the next ARA Teen Club dance party, 7:30 to 11 p.m., Feb. 15 in ARA Clubhouse.

Each member may bring a guest and guest couple to the event. School clothes are appropriate, and admission is 50 cents per person. Music will be provided by "The Centuries" band.

ARA Commissioner John Hess will welcome parents who wish to serve as chaperones.

Technical German Course Offered

GD/Astro employees wishing to "brush up" on conversational or technical German still have an opportunity to enroll in a course to be offered at economical rates under ARA sponsorship.

Instructor Julia Feron will furnish additional information to those who call her at 295-0359. In brief, a series of eight lessons will be presented individually or to groups of no more than eight persons, for a cost of $24.

Astro Wife Honors Graduate at State

Barbara Hurley, former GD/Astro employee, and wife of M. J. (Mike) Hurley Jr. (Dept. 512-2) has graduated with highest honors from San Diego State College, attaining an over-all grade point average of 3.96.

Mrs. Hurley scored a straight-A record in her major field, in addition to working for a time in GD/Astro's standards lab, and maintaining an active interest in fencing (her husband is ARA commissioner). Her father, Tassilo Proppe, is in GD/Astro Dept. 653-1.

WASH. U. ALUMNI TO MEET FEB. 24

A meeting Feb. 24 at University Club is final opportunity for University of Washington grads to join a newly organized San Diego alumni group as charter members. Coach Jim Owens will speak. Don Welch, GD/Astro Dept. 582-3, ext. 3350, can supply details.

Astro's Bartolomei On College Faculty

George Bartolomei, value engineering assistant to E. D. Heller, GD/Astro manager of cost reduction and value control, is instructing a San Diego City College course in Value Engineering during the spring semester.

The three unit class is approved by Society of American Value Engineers, and uses DOD Handbook H-111 as a text. It covers techniques of eliminating unnecessary costs from products and operations, with emphasis on military contract performance.

Ries New President Of Ind. Photographers

Bob Ries, photo specialist in GD/Astro's still photo section (Dept. 125) was installed last month as president of Industrial Photographers of San Diego County, a newly organized professional photographic society.

Work of GD/Astro cameramen in organizing the group is evident from the slate of officers. Besides Ries, office holders include GD/Astro's Keith V. Adams, secretary, with Jack Stevens and Frank Tercey, both Dept. 125, serving on the board of directors.

The organization meets the third Tuesday of each month in La Sala Room, House of Hospitality, Balboa Park. Speaker at the session Feb. 20, 7:30 p.m., will be Tom Hemphill, GD/Astro Dept. 549-9, who will discuss photo tracking techniques.

Schneider Leader In Pistol Scoring

Roland Schneider was top man in ARA Pistol Club's final January shoot, scoring 296 of a possible 300 points in master class of a .22 Police Course contest. He was trailed by J. S. Knutson with 292.

In expert class, Bill Dittmann fired 287, edging A. B. Carlson with 277, while Bill Worthington turned in a 262 sharpshooter score, and W. R. Ginley led Lyle Ewing, 222 to 206 in marksman class.

Results of a .22 Short National match found Al Schindler in the lead with 292, followed by Roscoe Anderson's 283, and 280s from Ralph Sanderlin (7x) and Warren Ranscht (3x).

Next matches will be held at 9:15 a.m., Feb. 23, at San Diego Police Pistol Range.

Ron Church to Talk For Astro Divers

Ron Church, award-winning underwater photographer, will be guest speaker at the meeting of ARA Astro Divers, 7:30 p.m., Feb. 12, in ARA Clubhouse.

Also featured will be trophy presentation to members of the club's top 1963 competition team: Jorge Zorrilla (captain), Billee Dilworth, Herb Boynton and John Phair.

On Feb. 9 the group held a dive at La Jolla Shores, searching the south branch of Scripps Canyon with snorkel equipment for Indian artifacts.

Heller Will Conduct Workshop on Value

E. D. Heller, manager of cost reduction and value control at GD/Astronautics, will conduct a special workshop on value engineering at the Feb. 21 meeting of the San Diego Chapter, American Institute of Industrial Engineers.

The meeting will be held at University of San Diego in conjunction with National Engineers' Week.

Heller's session will involve techniques the Department of Defense is stressing to enable taxpayers to obtain the most for their defense dollars.

Other key participants will take part in this, the 9th Annual Seminar staged by the industrial engineers' group.

Sports & Recreation

Annual Quest Started For 'Astro's Fairest'

Astronautics Recreation Association this week began its annual quest among Astro's "fairest" to find and crown a "Miss or Mrs. ARA" and a court to reign for the coming year.

Entry blanks for this annual contest are now available at employee services outlets. They must be submitted by Feb. 28.

Contestants must be employees or wives (no daughters) of employees of Astro, Air Force, NASA or contractors assigned to Astro on a permanent basis. Each must be sponsored by an employee of one of the groups mentioned. And each contestant must agree to appear for preliminary judging and, if selected, for final judging.

All contestants will appear before a panel of judges March 4. Eighteen finalists will be selected. They will model for ARA's annual spring style show set for March 18. During this show a second panel of judges will select a queen, plus four members of her court.

Winners will receive trophies or loving cups, plus crowns. And they will reign over all ARA-sponsored recreational activities for the coming year.

ARA-Sponsored Bowling Teams Lead Leagues

Five ARA-sponsored bowling teams now lead their leagues, with two other adult teams and a junior unit also operating at lanes throughout the city.

Leading in the La Mesa Classic with 37 wins and 23 losses is the ARA team captained by Tony Risso, Dept. 250, which also holds high season series of 2,909.

Holding the season's high single team game score of 1,074 is an ARA squad headed by Forest Erwin, Dept. 405-2, which is presently tied in the Clairemont Masters League with a Clairemont Bowl team.

In the Sunday night 875 Traveling League, Captain Bill Geopfarth's (Dept. 574-4) ARA team holds a two-game lead, and the ARA unit captained by Tom Chadwick, Dept. 652-2, is leading in the Victory Majors. Chadwick's team finished in second place during the initial league round, and holds high season's team series score of 2,780.

In the Tower 850 classic, Les Pickford's (Dept. 662-2) ARA-sponsored team is tied for first place in the second round, after finishing third in the first series.

ARA also has representative teams in the Clairemont 850 Scratch League with Captain Al Littau, Dept. 568-1, and in University Ivy League with Ottaviano Galbo, Dept. 661-3, captain.

The Junior Traveling League team captained by Ray Adams, whose father, Keith, is in Dept. 125, has won 13 of its last 18 games, with members Ray and Keith (Jr.) Adams, Mike Erwin, Ron Falls and Glen Lunow.

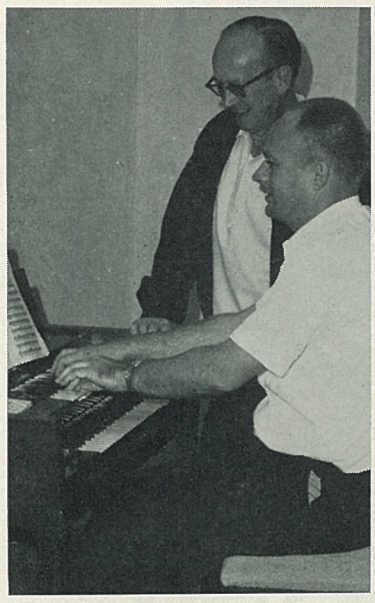
Bowlers Enter Annual Tourney

Entry forms for Astronautics Recreation Association's annual plant bowling championship are now available through employee services, bowling commissioners, directors and officers and bowling establishments.

The event comes off April 4-5 (team events) and April 11-12 (singles, doubles) at the Clairemont Bowl.

There will be both men's and mixed team events, plus singles events for both men and women and men's doubles and mixed doubles, plus the usual all-events for men and women.

Bill McHorney of ARA is serving as tournament director.



CLUB LEADERS — Key figures in ARA Organ Club include Commissioner Roy Rothacher, standing, and President Ben Hoffman. Group is open to both beginning and accomplished organists, features professional performers, instructor, at meetings, 7:30 p.m., first and third Tuesdays, ARA Clubhouse. — Photo by J. F. Jones.

Mike Brooks Leader In Bowling Classic

Mike Brooks, Joe Ragusa, Bill Geopfarth, Bill Timm and Mike Edwards, placed one through five respectively in GD/Astro Management Club's singles classic bowling tournament Jan. 25, 26.

The quintet will represent the club in a national industrial tourney, April 24, at Dayton, Ohio; in the National Industrial Recreation Association meet, April 25-26, in Ashland, Ohio; and in the National Management Association contest, May 2-3, at Detroit, Mich.

Their total series scores in the Astro tourney were a 2,108 for Brooks; Ragusa, 2,048; Geopfarth, 2,044; Timm, 2,041; Edwards, 2,032.

Others receiving contest trophies were Mel Shaffer for a high handicap series, 1,096; Phil Genser who rolled 259 for high scratch game; and Jim Epperly for a high scratch series of 1,035.

The top 20 scorers in the local meet will be formed into teams for a Zone A Management Association tournament in Long Beach, March 14.

Other team members will be Ray Parga, Bill Martin, Hal Stickel, Ray Mendoza, George Lang, Ben Wierzbicki, Keith Adams, Henry Eide, Virgil Akers, Don Crayton, Bill Blood and H. E. Mowery.

Tourney Scheduled For Chess Players

ARA Chess Club will sponsor a U.S. Chess Federation open rating tournament to be played at 7:30 p.m., Feb. 13 and on subsequent Thursdays for seven weeks in ARA Clubhouse.

The event is open to all USCF members, and tournament results will result in a national rating for each participant.

Details on the tourney are available from Bud Fagan, ext. 3220.

ARA Calendar

(GD/Astronautics Recreation Association has some 40 activities in operation for employees. For information, call ARA Headquarters, ext. 1111.)

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ASTRO DIVERS — Meets tonight (Feb. 12), 7:30 p.m., ARA Clubhouse. Guest speaker, Ron Church.

ASTRO LENS — Quarterly contest, 7:30 p.m., Feb. 16, Photo Arts Bldg., Balboa Park. Each member allowed up to four entries each in both black and white and color categories.

COINEERS — Meets 7:30 p.m., Feb. 19, ARA Clubhouse.

BOWLING—Plan now for plant championship tourney, Clairemont Bowl, April 4, 5, 11, 12.

BRIDGE — Play nights each Friday, 7:30 p.m., ARA Clubhouse.

CHESS — USCF open rating tournament opens 7:30 p.m., Feb. 13, and subsequent Thursdays for seven weeks, ARA Clubhouse.

EXPLORERS—Annual awards at meeting, 7:30 p.m., Feb. 19, ARA Clubhouse.

FIFE & DRUM CORPS—Meets Wednesdays, 7:30 p.m., ARA picnic pavilion.

GOLF — Club tournament at Rancho Bernardo, Feb. 15, 16. Reservations with ARA Headquarters, ext. 1111.

ORGAN CLUB — Meets 7:30 p.m., Feb. 18 in ARA Clubhouse. New members welcome.

RADIO — Discussion of electronic workshop facility at meeting tonight (Feb. 12); "home brew" contest, Feb. 28. Both 7:30 p.m., ARA Clubhouse.

ROCKHOUNDS — Weekend visit to Jade Mountain Mines and gem show at Indio Date Festival, Feb. 15, 16. Information, Fred Baugh, ext. 3580.

SPORTS CARS — Meets 7:30 p.m., Feb. 18, ARA Clubhouse. Business session, simple rally. Visitors welcome.

TEEN CLUB — Dance 7:30 to 11 p.m., Feb. 15, ARA Clubhouse, features dance exhibition, "Centuries" band. Admission 50 cents per person.

TOASTMISTRESS — Serra Mesa Club will hold special awards dinner meeting, Feb. 22 at Stardust Hotel. Details and reservations, Scarlett Smith, ext. 1313. New members welcome.

WIVES' CLUB — Luncheon meeting, Feb. 19, OceanHouse. Reservations, Helen Johnston, 277-2308.

Ham Club to Hold 'Home Brew' Contest

Two important meetings are scheduled this month by ARA Radio Club in its "ham" station in ARA Clubhouse.

Of particular significance is the session at 7:30 p.m. today (Feb. 12) when the new club construction will be discussed prior to ratification. In addition, ARA Commissioner Jack Jones will be present to explain facilities in the new ARA electronics workshop.

A Feb. 26 meeting, also at 7:30 p.m., will feature a "home brew" contest, in which members may enter home-built communication and test equipment. Kits are acceptable. Each member will be limited to one entry.

Two credit certificates will be awarded on basis of design originality, appearance, craftsmanship, etc.

Astro Wives Set New Records in Bowling

New San Diego bowling records were set recently by two GD/Astro wives taking part in the city women's tournament at Frontier Lanes.

In "A" division, Mrs. Jim (Barbara) Mahaffey and Mrs. W. E. (Nancy) Booth tallied 1,265 for a new doubles record, and Nancy went on to smash a "B" division singles record with 663 (including a 257 high game).

Their husbands are both in Dept. 756, assigned to Point Loma Test Site.

WINNERS—ARA Sports Car Club members honored at recent San Diego Council of Sports Car Clubs banquet display cars and trophies. Commissioner Judge Penick, left, won ASEBRING championship, and holds plaque awarded ARA group for top participation. Center is Earl Godenschwager, fifth place ASEBRING winner, and at right, Jack Gallant, placing seventh in Rallye Championship. Cars are, from left, Austin-Healeys owned by Godenschwager and Penick, Gallant's Lotus.

Sports Car Winners Include Penick's First in ASEBRING

ARA Sports Car Club earned a generous share of honors given by San Diego Council of Sports Car Clubs at the 1963 awards dinner held at OceanHouse last month. The event honored achievements of car fans in the Council's member clubs throughout the county.

ARA Commissioner E. S. "Judge" Penick was "winner of winners," receiving first place trophy in the ASEBRING Championship.

This category (All Speed Events But Racing), includes slalom, hill climb, gymkhana, etc., with standings based on total points during the year.

Also rating high in ASEBRING standings were Astro's Earl Godenschwager who ranked fifth, and Jack Gallant, ranked thirteenth. D. H. Haire, Charles Audet and George Lahey were also rated among the 89 in competition.

Gallant was highest ranked member of the ARA club in the Council's 1963 Rallye Championship standings, placing seventh. Other Astro folk among the 144 listed in rallye standings were Edith and Bill Williamson, Bruce Bertsch, Art and Janice Mason, Art and Gerri Wrightson, Ed and Esther Yeaton.

Collectively, the group carried home the Council's Club Participation Trophy for 1963.

Ski Club Will Map Three Month Plans

Astro Snow Ski Club will map plans for March, April and May ski trips to Mammoth Mountain and Big Bear when they meet at 7:30 p.m., March 4 in CRA Clubhouse.

Transportation plans are yet uncertain, although efforts will be made to augment personal cars with chartered bus trips to all locations. In addition, some thought is being given to a plane trip to the Mammoth area, possibly in March.

Competition skiing is being planned for April.

Coineers to Face Quiz on Currency

Astro's Coineers bow to the season next week (Feb. 19) by devoting major emphasis on coins, medals and currency featuring Lincoln and Washington.

The 7:30 p.m. meeting at ARA Clubhouse will feature a quiz on numismatic items of Lincoln and Washington, a featured speaker, display awards, refreshments, door prizes and free uncirculated coins.

Chess Club Team Beats Escondido

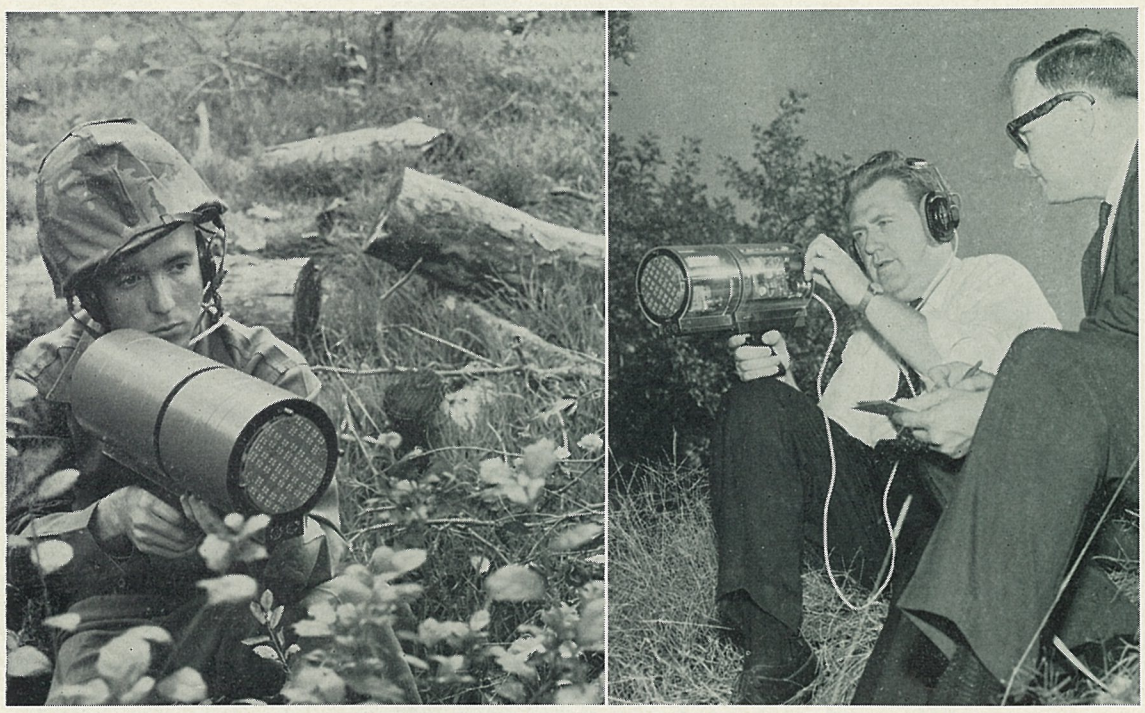
An ARA Chess Club team defeated Escondido Chess Club 10 to 3 in a 13-game match played recently at Escondido Senior Recreation Center.

The featured pairing involved two nationally rated experts, GD/Astro plant champion Newton Grant, Dept. 958, the victor, and Laiman Tiluks of Escondido.

Winning Astro players were Art Werbner, Stew Daniels, ARA Commissioner Jack Horning, Art Munson, Jim Thompson, Dave Hubiak, Norm Lonsdale, Jerry Crane and Roy Gilbert. Other players were Bud Fagan, Jerry Daniels (son of H. D. Daniels, Dept. 142) and Rod Crick.

Spectators may view a rematch between the two clubs, scheduled for 1:30 p.m., Feb. 13 in ARA Clubhouse.

LIKE WAY OUT—Getting in mood for Feb. 15 "Beatnik Party" slated for Alpha Clubhouse, Lompoc, are these members and spouses of GD/Astro Wives Club, Lompoc Chapter, at Vandenberg AFB. They are, from left, Bob Nelson, Betty Johnston, Virginia Schilling, Curt Johnston, Helen McQueary, Sunny Woodle, Ron Schilling and Janet Nelson.



ON THE LOOK-OUT—At right R. W. Jackman, project engineer for new GD/Electronics-San Diego Hand-Held Radar, demonstrates device for E. F. Demers, project technician. In photo at left military observer tries it out in combat condition. Radar warns operator of moving targets via audio signals through earphones.

Value Study Results In Record $2 Million Saving on F-106 Kits

A GD/Convair customer, the U. S. Air Force, is over $2-million to the good as a result of the GD division's value engineering program.

An analysis by Convair engineering of the F-106 Rapid Tune Magnetron Power Supply, conducted last year, showed that at least that much could be pared from estimated costs if the AF would approve relocation of the package. Initial estimate for design and delivery of 313 hydraulic power package kits was $5,452,611.

Challenging requirements of the project, GD/Convair value control teams came up with simplified design, substitution of off-the-shelf items, and elimination of expensive components to completely change the concept, and cost.

As a result of the analysis, GD/Convair received a contract for 235 kits last fall at a figure nearly $1½-million lower than the original estimated cost. The balance of total savings of $2,149,638 will be realized by the AF on follow-on orders in the next fiscal year.

This is probably the largest savings ever turned back to a customer through intensive value engineering, said H. P. Williams, GD/Convair manager of value control.

New Hand-Held Radar Introduced by GD/E-SD

A new radar—small enough to be held in the hand or attached to a belt—developed by General Dynamics/Electronics at San Diego was displayed for the first time at last week's (Feb. 5-7) National Winter Convention on Military Electronics in Los Angeles, Calif.

Capable of detecting and tracking a variety of moving objects, a completely self-powered prototype model of the new unit weighs only eight pounds and measures 12 in. long by 5 in. in diameter. By repackaging and using miniaturization techniques, GD/E engineers feel that the size could be halved and the weight reduced to less than five pounds.

Applications for the unique radar include front-line military detection and surveillance despite low visibility or wooded or jungle areas. Also, the radar can be used for communication with aircraft or vehicles as well as such commercial uses as border patrol, police detection, industrial security and hunting.

It works this way: the operator scans a potential target area by aiming the hand-held radar antenna in the general direction. When the radar detects a moving target, he hears a characteristic sound through either a pair of earphones or a tiny loudspeaker on the rear of the unit. For example, a walking man makes a heavy thumping target signal. The trained operator will recognize the sound as a man walking, a moving vehicle or an animal. As he scans with the radar, by moving it from left to right, he may peak the signal (where the target sound is loudest) which enables him to locate the moving object even though it may not be visible.

Simple instruction and a few hours practice allow the operator to identify the varying sounds as people, vehicles, animals, etc. Not only can he detect their presence, but also the approximate distance away and the direction. Range of the unit is 1,000 meters or two-thirds of a mile.

With current emphasis on highly mobile tactical military forces, GD/E engineers feel that lightweight hand-carried surveillance and local security radar sensors have a vital role in future military operations.

GD/E personnel involved in the development of the new-type radar include W. F. Briles, manager-electronic system predesign; R. W. Jackman and E. F. Demers of electronic system predesign.

Pres. Johnson Praises Redeye

Redeye, GD/Pomona-developed guided missile system, was praised by President Lyndon B. Johnson at a press conference in Washington on Feb. 1.

In discussing defense developments, the President stated: ". . . we are now completing development of new and highly advanced weapons systems . . . I think you would like to hear something about this, because you can take great pride in it.

"The first of these is Redeye. For the first time our ground combat soldiers will be able to fight back against a high performance enemy aircraft. The Redeye, which they can fire from the shoulder like a rifle, sends a heat-seeking missile in pursuit of the enemy airplane, with a very high probability of scoring. Once hit, the airplane will go down.

"Redeye has been developed by Pomona Division of General Dynamics at Pomona, Calif."

LEADERS—Photographed at Quality Control/Reliability panel meeting in San Diego last month are, from left, E. S. Winlund, GD/Astronautics, newly elected chairman of reliability technical panel, W. J. Martin, GD/Convair, chairman of quality control panel, T. W. Dunn, Electric Boat, J. Y. McClure, Corporate Office.

Ten GD Divisions Represented As Astro Hosts QC/Reliability

General Dynamics' Quality Control/Reliability Panel convened in San Diego Jan. 27-29, with GD/Astronautics as host division.

On the opening day of meetings at the Sands Hotel, J. Y. McClure, Corporate director of reliability, made opening comments, and representatives of ten General Dynamics divisions were welcomed by GD/Astro President J. R. Dempsey.

Following general discussions early on the agenda, delegates split into two groups. Attending were:

General Dynamics Corporation—J. Y. McClure.

Canadair Limited—H. L. McKeown, G. Sidaway.

GD/Pomona—A. C. McMaster, J. W. Dunifon, K. E. Hassler, J. C. Bear, J. M. Teresi, H. Bullington, T. F. Fore.

GD/Fort Worth—E. R. Weiher, A. Boyd, N. H. Simpson.

General Atomic—C. J. Brous, G. W. Chandler, L. Seyler.

Electric Boat—T. W. Dunn, O. R. Goode, H. T. Hilman.

GD/Electronics—Rochester — J. Snodgrass, J. J. Holland.

Stromberg-Carlson—H. Pitlik, C. W. Holden, W. P. Karas.

GD/Electronics - San Diego — R. F. Voell, H. J. Stuart, K. Sinclair, C. E. Klein, I. L. Kemper, A. S. Freedman, W. D. Garrett, J. Eichberger, J. W. Barrett.

GD/Convair—W. J. Martin, R. V. Shields, G. A. Covington, C. Heinrichs.

GD/Astronautics—C. L. Amaral, D. R. Archibald, J. F. Baebler, P. M. Benner, S. E. Blumberg, J. M. Bowers, J. R. Dempsey, G. C. Eggen, L. S. Franklin, L. I. Fredrickson, R. H. Gilliland, P. I. Harr, D. L. Hill, W. R. Jackson, W. G. Lux, W. E. Magnuson, W. J. Maloney, L. I. Medlock, L. A. Milton, P. A. Nagy, D. R. Nash.

K. E. Newton, R. L. Parkhill, Sam Petcher, J. H. Rusk, J. E. Sanders, M. M. Saunders, W. C. Seaforth, J. H. Sharmahd, H. O. Story, F. Virgadamo, H. O. Wendt, E. S. Winlund, A. J. Woodington. Jean Phillips, hostess.

NEW RADAR RANGE CHECKS PRECISELY ON REFLECTIVITY

Development of techniques and equipment for measuring precisely an object's reflectivity—the impression it creates on a radar screen—is part of an expanding technology at GD/Fort Worth.

Materials, aerospace vehicles and models are measured routinely on the division's relatively new 88-acre radar range just west of the main plant. The facility is an addition to research and engineering department.

The range consists of two target-rotating platforms mounted in underground pits, seven mobile trailers, several portable sheds, and an anechoic chamber (a sort of radar darkroom).

Radar measurements can be made manually. Or a digital trailer can be rolled up and plugged in to a regular monitoring trailer, and measurement can be taken on tape for computerized programs.

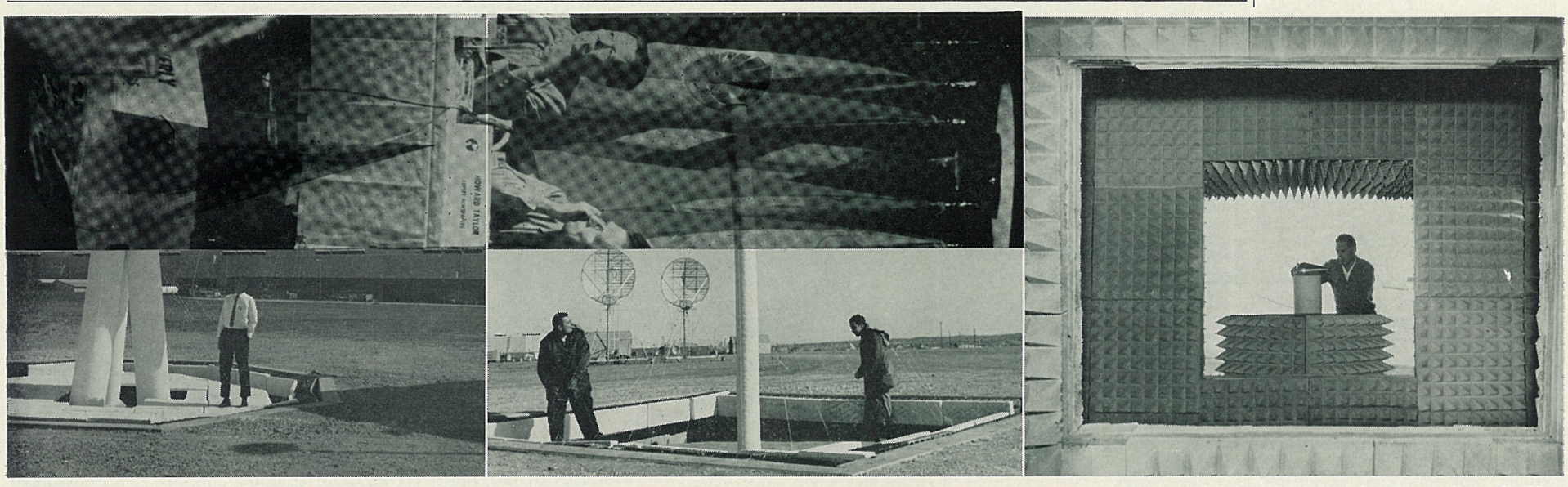
In the rotator pits, models are mounted on styrofoam columns and revolved 360 degrees. This enables engineers to read the model's reflectivity from virtually every direction, and from different angles of attack.

The range has been used to measure radar reflecting of many type targets, including full-scale measurements of aircraft sections.

Objects 40 feet long and weighing 4,000 pounds have been accommodated. But the capability goes up to 10,000 pounds. Parabolic antennas are the "eyes and ears" of the range.

"We are quite proud of our unique short-pulse measuring system," a spokesman said. "With it, we can detect objects only six inches apart."

Electronic equipment in itself does not provide complete capabilities for accurate reflectivity measurement. Other equipment and operating techniques must be developed to mount the material or model under test so that radar reflections of the mount are insignificant. Expertise is also required to rotate the target in azimuth through 360 degrees for various pit angles, and make a synchronous recording of cross-section versus azimuth; to calibrate measurements; and to reduce extraneous radar returns to an insignificant level.



RANGING — At new GD/Fort Worth radar range, left, Alan Streeter readies full-scale component on mount which rotates 360 degrees, while in center Don Ford, left, and L. E. Gregg adjusts guy strings on calibration sphere. At right M. J. Buchanan, associate engineer, readies model in anechoic chamber where baffles provide low reflectivity background. Range to measure reflectivity of objects is part of research and engineering department. (Photo by Ernie Lain.)

GD

ASTRONAUTICS EDITION

GENERAL DYNAMICS NEWS

Vol. 17, No. 5 PUBLISHED BY GENERAL DYNAMICS CORPORATION Wednesday, February 26, 1964

High Targets Set For '64 Cost Cut

GD/Astronautics departments have rallied in immediate response to requests for stringent cost reduction efforts issued recently by top government officials and General Dynamics President Roger Lewis.

After careful review of cost reduction potentials, GD/Astro departments have imposed upon themselves dollar savings goals totaling $34,050,000 for 1964!

Of this total, $5,750,000 in savings is expected to accrue from efforts in the area of value control — the division-wide program to prevent and eliminate unnecessary cost of products and practices through implementation of value improvement and value assurance projects.

Equally important as savings goals in dollars are other objectives of the overall cost reduction effort, which is designed to insure that each GD/Astro customer receives maximum value for every dollar spent with the division. These include:

The fullest possible support of General Dynamics Corporation cost reduction directives, and those cost reduction requests received from customers.

Generation of an industrial environment to instill in all employees a personal "cost-consciousness," to the end that GD/Astro may become a model within the aerospace industry for cost reduction philosophy, principles and attainments.

Examination of new cost reduction techniques applied in industry and government, and their implementation at GD/Astro whenever economically feasible.

Increased employee participation in GD/Astro's Employee Suggestion and Cost Improvement Proposal plans.

Noting the paramount importance of the cost reduction effort, President J. R. Dempsey opened the new year by "imposing a requirement on every . . . supervisor to initiate PERSONALLY at least one cost reduction project during the first quarter of 1964, as one segment of the overall Division Cost Reduction Program."

The projects, Dempsey explained, will be coordinated through department cost reduction representatives, and are not to be confused with the division's ES/CIP programs.

In establishing targets for the year, cost reduction plans were prepared by each major GD/Astro department — in general, each of those represented on the division staff.

GD/Astro's division savings goal, for value improvement and value assurance combined, has now exceeded a savings-to-cost ratio of 10 to 1, and is expected to increase materially during the year.

The cost reduction program is directed by E. D. Heller, manager of cost reduction and value control, reporting to Erle Hill, controller. Warren Ridge and George Bartolomei serve as cost reduction and value control staff, respectively.

Heller is aided in program direction and evaluation by the division Cost Reduction Staff, comprised of L. H. Boggess, manager of financial analysis; E. Fox, manager of budgets; R. E. Carlson, manager of internal audit; and D. C. Tempelton, contract administrator.

In issuing the division's cost reduction and value control plans, Dempsey stated that goals were formulated by departments as a realistic and practical approach to cost reduction. However, in no instance will these goals be applied with such rigidity as to jeopardize product quality, reliability or on-schedule production.

GD 1963 Finances in Brief

	1963	1962
Net Sales	$1,415,073,684	$1,898,481,708
Profit Before Income Taxes	64,205,609	58,483,460
Income Taxes	14,498,550	5,624,815
Net Income	49,707,059	52,858,645
Working Capital	188,450,627	128,144,701
Property, Plant and Equipment—Net	190,102,676	170,789,338
Long-Term Debt	125,716,172	148,525,032
Share Owners' Equity	256,594,152	170,539,023
Backlog of Orders	1,159,000,000	975,000,000
Common Shares Outstanding	9,997,992	9,997,290

ROGER LEWIS reports increase in backlog . . .

Pre-Tax Earnings Rise, Roger Lewis Reports

(Following is the complete text of President Roger Lewis' report to share owners as carried in General Dynamics Corporation's 1963 annual financial report this month.)

General Dynamics Corporation continued to make important progress in 1963.

This progress is reflected by increases in both earnings before taxes and profit ratios in spite of a reduction in sales. Net income for 1963 would have shown a significant increase over that for 1962 if income taxes had been payable on the total earnings of the Corporation for each of the past two years.

Performance achievements in completing the commercial jet transport program have resulted in a substantial special credit which has been added to earned surplus.

At the end of 1963, the Corporation had no short-term bank loans outstanding, and working capital was up sharply. During the year we also prepaid a sizable installment on our long-term debt.

• Earnings

Consolidated net income of General Dynamics Corporation and subsidiaries for the year ended December 31, 1963, was $49,707,059, equivalent to $4.97 per common share outstanding. In the preceding year, consolidated net income was $52,858,645, or $5.29 per common share.

Earnings for the two years, however, are not directly comparable. Due to the carry forward of losses from 1961, no provision for United States income taxes was required on the income of General Dynamics Corporation for 1962. During 1963, the combination of operating income and the special credit used up the remaining loss carry forward, and provision for United States income taxes has been made on a portion of 1963 operating profits. In both years, provision was made for taxes on earnings of subsidiaries.

Pre-tax profit for 1963 amounted to $64,205,609, compared with a pre-tax profit of $58,483,460 in 1962. If the Corporation had been required to provide for United States income taxes on all its earnings in both years, net income for 1963 would have been $32,790,059, or $3.28 per common share, an increase of 13% over net income of $29,008,645, or $2.90 per common share, for 1962.

• Special Credit Jet Transport Program

The special credit of $33,000,000 is the result of a lower final cost to complete the commercial jet transport program than had been provided for previously.

The 1961 write-off on the Convair 880/990 passenger transport program took into consideration these factors: costs incurred and to be incurred both on completed aircraft and on those still under construction; the anticipated costs of modifying and testing delivered and undelivered aircraft; the customers' right in certain cases to return or refuse aircraft in the event performance guarantees could not be met; and probable losses on aircraft for which we did not have firm orders. Performance guarantees have been fully met and anticipated costs to manufacture the aircraft have been cut sharply. In addition, modifications to the aircraft resulted in improvements in performance and speed which earned bonus payments for the Corporation and helped sell additional planes. The commercial jet transport program is now considered complete.

• Sales and Backlog

Consolidated net sales of General Dynamics Corporation and subsidiaries in 1963 were $1,415,073,684, compared with sales of $1,898,481,708 in 1962.

Completion in 1962 of the Atlas base activation program by the Astronautics division was the primary reason for the reduction in sales. Volume was also somewhat lower in 1963 at the Fort Worth division and at Canadair Limited.

Sales of General Dynamics fall into five general categories. Their approximate proportions during 1963 were as follows:

Aircraft	23%
Missiles and space	36%
Submarines	17%
Electronics	10%
Industrial	14%

Deliveries to various services and agencies of the Government accounted for approximately 75% of sales; the balance went to commercial and industrial customers.

Backlog of funded orders at December 31, 1963, was $1,159,000,000, compared with $975,000,000 a year earlier. This does not include orders expected to be funded or negotiated as part of authorized Government programs.

• Debt

In February 1962, General Dynamics' short-term bank loans were at a peak of $187,000,000. At the end of 1962, this had been reduced to $90,000,000, and by mid-1963, the Corporation had no short-term loans outstanding. While the company has borrowed, and will continue to borrow, short-term funds for general purposes, it had no such loans outstanding at year-end.

During 1963, long-term debt was also reduced by regular installment payments and by the prepayment of an additional $17,500,000.

As a result of 1960 and 1961 losses, dividend payments were restricted by provisions in long-term loan agreements made prior to that period. Recent amendments to those agreements permit the Corporation to pay dividends on common stock out of net income earned subsequent to December 31, 1963. However, no prediction can be

(Continued on Page 2)

COWELL JOINS GOLDEN'S STAFF

James M. Cowell Jr., formerly works manager for Curtiss-Wright Electronics division, has joined the staff of Max Golden, General Dynamics vice president.

J. M. Cowell

Cowell, educated at Rutgers, was production control manager at Bendix Aviation's Philadelphia division until joining the Air Force in 1943 for two years of service in the European theater. Following war service he was in charge of planning and production control for Sonotone Corp. and joined Curtiss-Wright's Aeronautical division in 1949 as production control manager, and later director of purchases. He was acting general manager of Curtiss-Wright's Metals Processing division before taking over the electronics post.

COST CUTTERS GET EMBLEM HOLDERS

GD/Astronautics this week revealed plans for a special honorarium to employees making a personal contribution to the current division-wide cost reduction program.

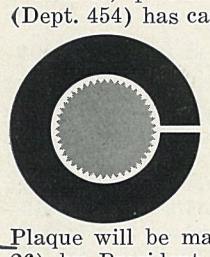
They will go to all employees submitting either an Employee Suggestion (hourly employees) or a Cost Improvement Proposal (salaried employees) as a means of recognizing the individual as a member of a select, cost-conscious group making a personal contribution to an extremely important effort.

Called a service emblem and awards holder, the plastic device is suitable for use with current identification badges. It can be fitted to the identification badge without special attachments, thus meeting regulations governing defacing badges through drilled holes, etc.

Division systems personnel are forwarding holders to all employees who have submitted an ES or CIP during 1964.

Plaster, Plastics and Foundry Captures Craftsmanship Award

Plaster, plastics and foundry (Dept. 454) has captured the first monthly award in GD/Astronautics Craftsmanship program.



Formal presentation of the Craftsmanship Plaque will be made today (Feb. 26) by President J. R. Dempsey at his monthly management meeting.

Close behind Dept. 454 in the final standings were Plant 19 machine shop (Dept. 715), while processing (Dept. 733) ranked third.

On hand this afternoon to honor representatives of the top departments will be Dempsey, Col. Malcolm K. Andresen, Air Force Plant Representative, Ronald Rovenger, head of the NASA office at GD/Astro, and P. I. Harr, director of reliability control.

Representing their departments during award ceremonies will be General Foreman M. O. Ramsey, for Dept. 454, E. O. Johnson, general foreman, for Dept. 715, and M. M. Goodhart, general foreman, for Dept. 733.

Department spokesmen, interviewed last week by **General Dynamics NEWS**, indicated a uniformly high level of enthusiasm for the Craftsmanship program.

Employees in winning Dept. 454 had adopted as their philosophy, "Don't pass anything along to inspection until you're sure it meets all quality requirements."

Foremen G. L. Olson and W. R. Walker joined Ramsey in stating, "All of us in the department like to think our work is craftsmanlike. We feel a personal responsibility to produce work we can be proud of. If we don't succeed in satisfying ourselves with the quality of our work, it can only reflect unfavorably on us as craftsmen."

Similar attitudes are reflected in statements from the other

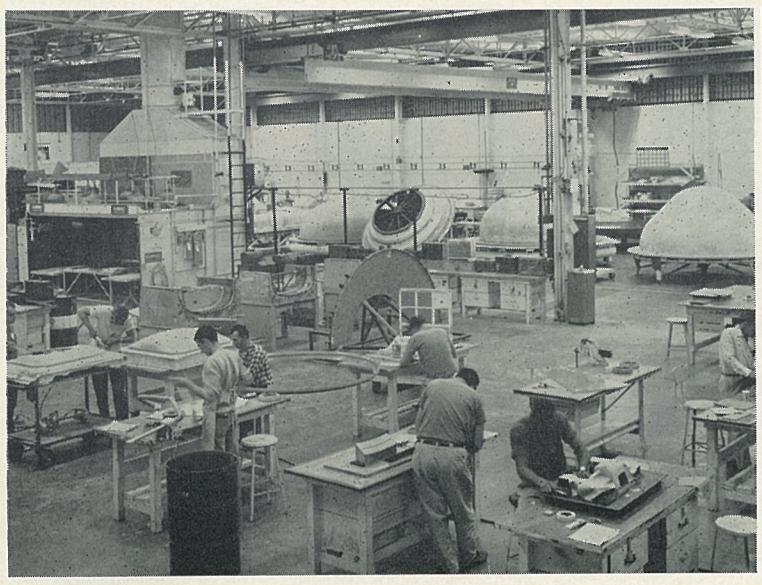
(Continued on Page 2)

GD/Astro Mgt. Club To Host Athletes

GD/Astronautics Management Club will play host tonight (Feb. 26) to cross country runners and coaches from San Diego County high schools.

Occasion is the club's annual Cross Country Night, and will be held in ARA Clubhouse.

Speaker will be Jim Grelle, former University of Oregon star and 1964 Olympic hopeful, who last year set the top American mile mark of 3:56.1-minutes.



THE CRAFTSMEN—Some of Dept. 454 craftsmen who teamed with others in plaster, plastic and foundry group to capture first monthly Craftsmanship award at GD/Astro, are pictured in portion of work area which extends throughout Bldg. 27 at San Diego main plant.

Plaster, Plastics and Foundry Captures Craftsmanship Award

(Continued from Page 1)

ranking contenders.

At Plant 19, Johnson, speaking for Dept. 715 employees, said, "If we don't come in first, you can be sure we're going to try even harder to win the next round. We know our work is good. We want it to be the best."

Goodhart emphasized, "Dept. 733 is proud of its work. If we don't make it this time, it won't be long before we're in the winner's circle. We're all trying — all the time — and that kind of spirit is hard to beat."

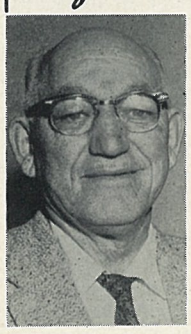
Taking part in the Craftsmanship competition, part of a division-wide GD/Astro effort encouraging employees to "Do Good Work," are major production departments.

Besides the three leading departments, participants are (in numerical order) Depts. 382, 673, 714, 718, 723, 731, 732, 758, 759, 781, 972. Similar contests for departments at Vandenberg AFB and Cape Kennedy are now under study.

Contest scoring is based on GD/Astro Quality Reports and provides participating units with a practical method of measuring quality improvement in their work.

All groups involved are now identified by a white Craftsmanship sign displayed beneath department signs. Winners of monthly contests will display a large "Craftsmen-of-the-Month" banner.

Log Book Entries



Thirty years of service were recognized recently when Norman L. Wire, Dept. 759-0, received three-decade emblem.

Service Emblems

Service emblems due during the period Feb. 16 through Feb. 29.

Twenty-five-year: Dept. 140-2, G. L. Helling.

Twenty-year: Dept. 332-2, E. M. Lizarraras; Dept. 382-1, H. D. Hill; Dept. 954-2, C. D. Hollis.

Fifteen-year: Dept. 110-0, E. H. Boardman; Dept. 143-1, C. E. George; Dept. 144-1, P. H. King; Dept. 401-1, B. B. Michael; Dept. 732-0, J. V. Vecchio; Dept. 780-0, Julio Ereneta; Dept. 835-3, L. A. Rodriguez.

Ten-year: Dept. 020-1, S. J. Gwazdacz; Dept. 110-0, D. C. Tempelton; Dept. 141-2, L. E. Jolley; Dept. 250-2, S. C. Kelly, L. E. McGinnes; Dept. 290-1, Gloria A. Gatewood; Dept. 332-1, Mary Contreras; Dept. 383-2, A. L. James; Dept. 406-0, Helen L. Shaw; Dept. 454-0, E. J. Wawrzynski; Dept. 480-0, R. J. Franklin; Dept. 684-2, J. B. Kenney; Dept. 756-0, F. E. Rogers; Dept. 759-0, Frances L. Bates; Dept. 972-0, W. M. Treichel.

VANDENBERG AFB

Ten-year: Dept. 576-6, Phyllis M. Julian.

Births

GUINN—Son, Kerry Deane, 8 lbs., 1 oz., born Jan. 28 to Mr. and Mrs. Barry M. Guinn, Dept. 951-4.

MENDOZA—Son, Anthony Raymond, 8 lbs., 15 oz., born Feb. 15 to Mr. and Mrs. Ray Mendoza, Dept. 130-5.

MILLER—Son, Michael Ray, 6 lbs., 15 oz., born Feb. 15 to Mr. and Mrs. Ray Calvin Miller Jr., Dept. 759.

Retirements

WHITE — William D., Dept. 718-0. Seniority date Oct. 14, 1946. Retired Feb. 1.

Deaths

BLACKWELL — Paul F., Dept. 756. Died Feb. 14. Survived by wife, Evlyn.

WALTER — Stanley C., Dept. 424-1. Died Feb. 17. Survived by wife, June, and daughter, Wendy.

Controller's Dept. Will Dance March 14

Astronautics' controller's department has selected March 14 for its annual dance and El Cortez Hotel's Caribbean Room as the site.

Bart Hazlett and his band will provide music.

Tickets, at $1.50 per person, are now available throughout controller functions. Jerry Janda is planning chairman.

Personals

We wish to express our deep appreciation for the expressions of sympathy tendered on the death of Wilfrid J. Brown.

Nina Belle Brown
Vivien Bennett

* * *

Your kind expression of sympathy on the death of Florence Draper is deeply appreciated and gratefully acknowledged.

The Draper family.

Papers Presented

WILSON—P. E., Dept. 557-1, "Nonlinear Problems in Structural Mechanics," Notre Dame AIAA Chapter, South Bend, Ind., Feb. 27.

MUNSON, MCCABE GET NEW TITLES

C. S. Ames, vice president and program director, has announced organizational realignment of functions in the space launch vehicles (SLV) project at GD/Astronautics.

The change, replacement of former systems engineering and reliability (Dept. 650) with two departments, is designed to improve engineering effectiveness, and to increase assurance of timely and successful fulfillment of contractual responsibilities.

Named manager of systems engineering was L. E. Munson, with responsibilities including provision of system design criteria and functional requirements for SLV, related support equipment and launch facilities; design evaluation; and associate contractor coordination.

C. F. McCabe was named manager of engineering reliability responsible for reliability and maintainability, test and procedures integration, and product review activities.

Both Munson and McCabe report to F. D. Applegate, assistant program director.

GD/ASTRO HOSTS SPACE SCIENTISTS

GD/Astronautics has played host to more than 50 space scientists and executives taking part in a familiarization course on the Air Force's new standardized Atlas space launch vehicle over the past two days (Feb. 25-26).

There were representatives from the National Aeronautics and Space Administration, the aerospace industry and the Air Force.

Briefings covered all standardized Atlas systems and missions as well as advanced applications of the vehicle.

Many of those taking part will remain tomorrow (Feb. 27) and Friday at Astro for a similar familiarization course on the Centaur vehicle.

Host for the Atlas space launch vehicle briefings was C. S. Ames, vice president and program director—SLV. Grant L. Hansen, vice president and program director—Centaur, will host Centaur briefings.

Astro Continuing Luncheon Movies

Lunch hour movies of general interest to GD/Astro Plant 71 personnel continue to be shown Tuesdays and Thursdays from 11 a.m. to 1 p.m. in Room 3, Bldg. 17. They are free.

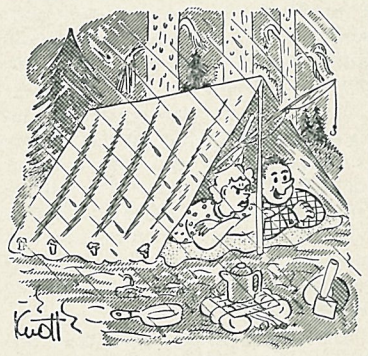
Tuesday subjects will feature health and medical topics, while Thursday sessions will be devoted to industry-type films.

CHILDREN'S TENNIS LESSONS PROPOSED

Tennis lessons for children are being considered by Astro's ARA tennis activity, if interest warrants, Commissioner Bill McHorney reports. Lessons would be offered Saturday mornings in beginning, intermediate and advanced stages. Children or parents interested may contact McHorney at ext. 1111.

TEEN CLUB PLANS CLUBHOUSE DANCE

Astro Teen Club will stage a regular dance at 7:30 (to 11 p.m.) March 7 at ARA Clubhouse. One guest per membership card will be permitted with admission set at 25 cents per person. "The Cavalyers" will provide dance music.



"Just think! Last week we were cooped up in town with nothing to do but play bridge, look at TV, go to parties and . . ."

Pre-Tax Earnings Rise, Roger Lewis Reports

(Continued from Page 1)

made at this time on dividend action which may be taken by the Board of Directors in the future.

• New Investment

At the end of 1963, General Dynamics purchased the physical assets of the Quincy, Massachusetts, shipyard of the Bethlehem Steel Company. This shipyard, which will be under the jurisdiction of the Electric Boat division, supplements our existing shipbuilding capabilities at Groton, Connecticut.

We have purchased 2200 acres of land near the Astronautics division plant in San Diego. This land will be used as a test site to study application of newer and more powerful fuels for space vehicles.

During the year, we increased our investment in The United Electric Coal Companies, bringing General Dynamics' ownership of United Electric to approximately 53% of the stock of that company.

The Corporation also acquired the Darlington Brick Company, a producer of brick and tile products in the Pittsburgh, Pennsylvania, area.

• Key Programs: Aircraft

Initial design and development of the F-111 bi-service tactical fighter is well under way and on schedule at the Fort Worth division. The development engineering inspection of the full scale mock-up was completed in September. The United States Government has received an order for 24 production F-111 aircraft from the Government of Australia.

At Canadair Limited, production continued on the CF-104 for NATO air forces. The first production CL-41 jet trainer was delivered to the Royal Canadian Air Force. Development proceeded on both the CL-84 vertical takeoff and landing aircraft and on the CL-89 reconnaissance drone for battlefield use.

The Convair division received a substantial follow-on subcontract for tail sections for the C-141 military cargo jet.

• Nuclear Submarines

The Electric Boat division established a new record in 1963 with the launching of five nuclear submarines. During the year, the division was awarded contracts for construction of four submarines, as well as contracts for design of improved classes of missile and atttack submarines. Current backlog of submarines under construction or on order includes ten Polaris and seven attack types.

• Space

Highlights for the year included the Atlas launch of astronaut Gordon Cooper on his 22-orbit flight. The Centaur space vehicle, the first United States vehicle to use liquid hydrogen as a fuel, was successfully orbited in November. Both Atlas and Centaur are built by the Astronautics division.

The Little Joe II launch vehicle, built by the Convair division, was successful in its first firing. Six Little Joe II's are currently on order for use in the test phase of the Apollo program.

During the year, we received new space contracts for: standardized launch vehicle versions of Atlas; SATAR research satellite prototype and flight vehicles; a modernization program on Atlas F missiles; additional Glotrac stations for the Air Force's global tracking network; a study of a four-man life support system capable of sustaining men in space for periods up to a year; a research program on Flox (liquid oxygen—liquid fluorine) as a possible additive to provide greatly increased thrust for Atlas launch vehicles.

• Tactical Missiles

Production of Terrier and Tartar missiles continued at the Pomona division. During the year, four Tartar and six Terrier-armed ships were commissioned by the United States Navy. France commissioned its first Tartar-armed destroyer. Six countries now plan to use these missiles in their fleets.

Research and development work on the Redeye man-carried antiaircraft missile will be continued during 1964. A contract for a preproduction planning study for Redeye has been received. Development of the Mauler mobile surface-to-air missile system is progressing.

• Electronics and Telephone

At the Electronics/San Diego division, which was established as a separate division during 1963, sales of computer display consoles, electronic printers and computer microfilm recorders are developing at a satisfactory rate. The division received a contract to produce computer display equipment to be used in the Gemini and Apollo programs by the new NASA Space Flight Center in Houston. Test flights in jet aircraft of the division's Terrain Following Radar system were successful.

Telephone exchanges made by the Stromberg-Carlson division were ordered for Anchorage, Alaska, and Iraq, the latter as mobile van-mounted systems. The division has received a contract from the United States Army to develop and install an electronic telephone switching system for use by defense commands.

The Electronics/Rochester division received major production contracts for radio communications equipment from all branches of the military services.

• Nuclear

Research and development work has been completed for the 40,000 kilowatt HTGR power station being built at Peach Bottom, Pennsylvania, for the Philadelphia Electric Company and 52 other utility companies. The entire nuclear steam supply system of this first commercial High Temperature Gas-Cooled nuclear power station was the responsibility of the General Atomic division.

Results of this program have been reflected in other new contracts: a number of members of High Temperature Reactor Development Associates have contracted for advanced work in the nuclear power field; the ESADA group of New York State utilities is extending its work with us on design of a 300,000 to 500,000 kw station; the ARDA group of 11 western utilities is joining us in an advanced 250,000 kw design; a group of 22 utilities is sponsoring an advanced nuclear fuel program; and the original study for a 1,000,000 kw HTGR for the Atomic Energy Commission has led to a follow-on program based on this concept. The fusion research program conducted jointly with the Texas Atomic Energy Research Foundation is being continued.

• Industrial

Sales of compressed gases and related equipment increased again during 1963. Profits of the Liquid Carbonic division were significantly higher than in the previous year, and prospects for growth are excellent.

Coal and lime sales by the Material Service division increased during the year, although demand was slightly lower for such construction materials as concrete and heavy aggregates.

Production of high-precision motors at the Electro Dynamic division was quickly restored to normal at the new plant in Avenel, New Jersey, after destruction by fire of the former plant in Bayonne, New Jersey. In addition, the Dynapak line of high energy metal forming equipment and the line of air systems products, both previously produced at other divisions, have been transferred to Electro Dynamic.

* * *

The results of 1963 operations have placed the Corporation on a sound financial foundation. Our organization has been strengthened, and the balance among our diversified operations and key programs has been improved. We are planning increased expenditures both for research and development and for facilities. In spite of increasing competition in all areas, we consider the Corporation's prospects for the future as promising.

By order of the Board
Roger Lewis, President

General Dynamics NEWS

Published by General Dynamics Corporation, One Rockefeller Plaza, New York 20, N. Y.; with editorial headquarters at 3302 Pacific Highway, San Diego 12, Calif., P.O. Box 1950, telephone 296-6611, ext. 1071. Logan Jenkins, editor-in-chief.

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* * *

Affiliated editions of General Dynamics NEWS are published in Rochester, N. Y., covering GD/Electronics and Stromberg-Carlson, editorial offices, 100 Carlson Road, HUbbard 2-2200, ext. 2555. Fred E. Voss, editor; and at Groton, Conn., covering GD/Electric Boat, editorial offices at Groton, HIlltop 5-4321, ext. 300 and 513, Joseph Tracey, editor.

Gen. Bradley Briefed On Projects' Status

Gen. Mark E. Bradley Jr., Commander of the Air Force Logistics Command, Wright-Patterson AFB, Ohio, was briefed by heads of three General Dynamics divisions on status of their military programs during a one-day visit to San Diego Feb. 7.

Presentations, held at GD/Convair division, were made by J. H. Famme, Convair president; John L. Lombardo, general manager of GD/Electronics-San Diego; and President J. R. Dempsey of GD/Astronautics.

Other GD men involved in the consultations were W. W. Fox, director of engineering, and R. R. Hoover, manager-transport projects, of Convair; and W. L. Van-Horn, vice president and program director Atlas weapons system, and Col. M. K. Andresen, AF Plant Representative, at Astronautics.

General Bradley was principal speaker the same day on the status of AF logistics today and in the future at the San Diego Post of the American Ordnance Society.

GD/FW Designs New B-58 Flight Control

GD/Fort Worth started work this month on a program to design, develop and flight test an improved flight control system for the B-58 Hustler, Ralph Reade, B-58 program director, announced.

Design of the prototype system will be worked out by GD/FW and vendors, and will be flight tested in a B-58.

VIP VISIT—Gen. Mark E. Bradley Jr., USAF, Commander AF Logistics Command (center), is greeted by GD/Convair President J. H. Famme and Lt. Col. C. W. Atterholt, Chief San Diego Air Procurement District, at arrival in San Diego Feb. 7.

Astronautics 'Cost Philosophy' 'Do It for Less, Retain Quality'

Division cost reduction philosophy was expressed for 40 participants in GD/Astronautics Value Engineering Seminar 2-64 earlier this month by President J. R. Dempsey who spoke at the opening session Feb. 10.

"Our purpose in these seminars is to do a great deal more with a great deal less money—and still deliver a quality product," Dempsey told the group. "You will be learning to think in the way we hope everyone in the division will think as they go about their daily work."

Dempsey linked seminar activities directly to the division's future potential, explaining, "The best basis for our continued success in a highly competitive industry is the ability to adapt to our customers' changing needs. This responsiveness is important because in the short history of GD/Astro, we have already seen changes in the needs and attitudes of our customers.

"In 1954, the requirement was to develop Atlas—fast! Cost and reliability were important, but time was the most vital element.

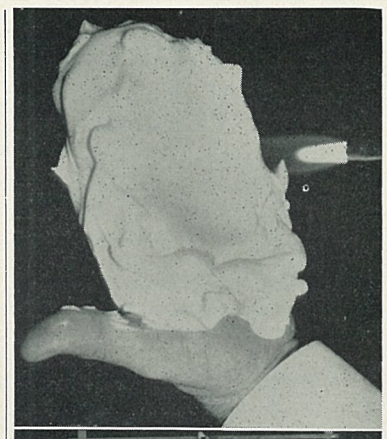
"Today we have attained a satisfactory level of strategic capability. Secretary McNamara has emphasized that the present need is for improved reliability and lower operating costs.

"We must get costs down," Dempsey stressed. "Not by 'cheapening' our products, but by producing at the lowest reasonable cost while retaining quality and function."

The President's remarks opened two weeks of intensive training and practical VE experience on hardware projects for the seminar participants, during sessions coordinated by Everett Lindem of educational services (Dept. 130-3).

Project presentations to management were made last Friday (Feb. 21).

"Look here, Webster . . . When I told you to relax, I didn't mean . . ."



HAVE FAITH! — Phil Cummins of GD/Fort Worth has courage of his convictions. That's his hand covered by shaving cream, and that's 3,000-deg.-hot acetylene torch!

McMaster, Fore Cited by AMC For Quality Job

Two GD/Pomona men, A. C. McMaster, director of quality control, and T. F. Fore, engineering chief of reliability, were cited last week by the Army Material Command, Washington, D. C., for key roles on the 110-man Reliability and Quality Assurance Task Force which has just completed a six-month study of AMC's quality assurance program throughout the nation.

The Task Force, which was divided into an executive committee and 11 task groups, recommended some 67 improvements in the program through which AMC insures the consistent quality of the more than a million items it handles, buys or manufactures for the U. S. Armed Forces.

McMaster served as chairman of Missile Command Division and Fore was chairman of Research and Development Division.

The study group was organized at the request of AMC commanding general, Lt. Gen. Frank S. Besson Jr., by the National Security Industrial Association with cooperation of American Society for Quality Control.

To implement recommendations made by the NSIA study group, AMC will establish a quality assurance office at its Washington headquarters, reporting directly to the commanding general. Concurrent action to strengthen quality assurance activities is also under way at AMC's seven subordinate commands. Of the 67 recommendations made, 65 per cent have been accepted for implementation while the remainder will be studied further.

Although the Army has long maintained a satisfactory quality assurance program, the proposed concept of "total quality control" will receive greater emphasis through Army Material Command to insure that all actions which bear on quality and reliability of end product will be subject to scrutiny and management at all levels. To industry this means that increased responsibility will be placed on supplier-contractors for top quality performance and that more reliability incentives will be placed in Army contracts.

SMU AWARDS SCIENCE DEGREES

Masters of science degrees in engineering administration from Southern Methodist University were recently awarded to Kenneth Pete Brookshier, senior aerosystems engineer, and George Stein, senior structures engineer, of GD/Fort Worth.

All Over 'Shave'

Foam-Filled Survival Suit Developed at GD/Fort Worth

Lightweight flying garb that can be transformed into an all-purpose, foam-filled survival suit in 18 seconds may soon be the salvation of pilots.

At least that's the hope of GD/Fort Worth's industrial security department, which has developed such a suit to protect far-ranging pilots in virtually any emergency —fire, decompression, or bailout over water or snow.

Key to the suit is rows of bladders, covered with a fire-repellant material and sewn over the uniform two inches apart.

In an emergency, the pilot simply triggers a pocket-sized container of pressurized foam at a point near the belt line. Each series of bladders inflates accordion-like, pushing the bladders together and forming a virtual one-inch coat of foam.

The transformation takes place within 18 seconds, and the foam adds only about 8 ounces to the weight of the uniform.

Developer Phil Cummins demonstrated the fire-retarding efficiency of chemical foam by spreading a coat over his hand, then applying an acetylene torch. The flame reached an intensity of 3,000 degrees F., but it didn't penetrate the foam.

"This is significant," Cummins pointed out, "because the temperatures created by a JP-4 fuel fire probably would range between 600 and 1,000 degrees F."

Inflated with foam, the survival suit could enable an airman to escape from a burning plane, or survive until rescued. It would keep him afloat indefinitely in water, or insulate him from bitter sub-zero weather.

"In effect," Cummins told GD/FW Operating Council members in a recent demonstration, "this suit takes the place of a Mae West, or separate suits made especially for survival in water, cold weather or fires.

"The layers of foam would also cushion the airman, to a certain extent, against shock and buffeting."

Development of the all-purpose suit is another step in industrial security department's continuing effort to improve fire-fighting techniques.

Time Swings Backward

Ceramics Viewed as Answer To Resist Supersonic Heat

Materials similar to those used by cave men over 15,000 years ago to make earthenware are employed by GD/Fort Worth engineers in producing certain components for modern Mach 2 airplanes.

"The art of ceramics is almost as old as man himself," points out J. E. Burroughs, senior design engineer, "but it promises to have countless space-age applications.

"Ceramic glass windows, for example, are used on B-58 frontal windows instead of plexiglass, which can withstand temperatures only up to about 220 degrees F. On a Mach 2-plus airplane, temperatures will commonly get up to about 400 degrees F. up front.

"Accordingly," Burroughs continued, "we're investigating usage of special ceramic materials not only for F-111 windows, but certain radomes and engine exhaust areas, where certain electrical requirements are needed and where extreme heat will be met."

As airplanes fly faster, ceramic materials will probably find increasing applications for a number of reasons. They're stronger at temperature, highly sensitive to electricity and moisture, and not susceptible to catastrophic failure with prolonged heating. (Highest known melting point for any material — a ceramic — is about 7,200 degrees F.)

Hypersonic vehicles, in particular, will look to ceramics for leading edges and other front units which must bear the brunt of heat during flight in dense atmosphere or during re-entry, Burroughs contends.

"A space vehicle might initially be subjected to temperatures of over 5,000 degrees F. in certain areas," Burroughs said, "and then perform in 3,000 degrees F. temperatures for over an hour during entry into the earth's atmosphere. Unsupported refractory metal alloys would fail in a short time under these circumstances."

One answer, he suggested, might be to cover the ceramic-coated refractory metal structure of the space ship with a ceramic composite material.

Clayware, dating back to around 15,000 B.C., was the first known use of ceramics, although natural-occurring glasses were used as early as the Stone Age. Glazes on stone beads have been found dating back to 12,000 B.C.

But an intensive study of the fundamental chemistry and physics of ceramics — plus basic research — didn't start until around 1925.

"In the past 35 years," Burroughs said, "the art has advanced tremendously. Today, ceramics are found in bathroom fixtures, spark plugs, safety glasses, insulators, television sets (up to 65 per cent of a TV set), fiber glass radomes, wheel-well fairings and nose cones made essentially of ceramic products, and in many other parts of modern jet aircraft."

THEN AND NOW—J. E. Burroughs, FW senior design engineer compares ceramic radome for jet plane with 600 A.D. jar made of clay-based ceramic material. Many other space-age applications are being found for ceramics.

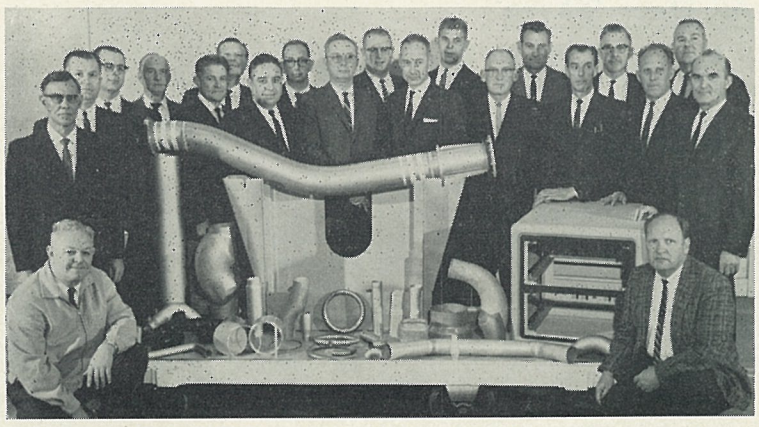
Two From Pomona To Present Papers

Two GD/Pomona men will present technical papers during first annual Western Metal and Tool Exposition and Conference at Statler Hilton Hotel, Los Angeles, March 16-20.

John H. Rizley, chief of materials research and process engineering, will give a paper on "The Materials Engineer—An Effective Aid of Value Analysis" on March 17.

At March 18 sessions, J. R. Ewell, manufacturing engineer, will present a paper on "Machining Rene 41."

WESTEC is sponsored jointly by American Society of Tool and Manufacturing Engineers and American Society for Metals.



VALUE CONSCIOUS — E. D. Heller, GD/Astro manager of cost reduction and valve control, joined with C. C. Pope, tool project engineer, to congratulate Dept. 403 engineers for value control efforts with $550,300 saved. Shown with items which produced siginificant savings are (from left): M. L. Marks, J. L. Browning, A. Rohr, R. E. Bruce, H. D. Thompson, R. P. Concannon, G. W. Webber, C. E. Roye, W. E. Nicks, Pope, T. L. Cross, Heller, L. M. Whitney, L. M. Gibson, G. M. Loudermilk, W. E. Ladd, J. E. Carlin, A. J. Thurlby, D. M. Brown, R. R. Sodomka, J. Mann.

GD/Astro Tool Project Section Outstanding in VE Efforts

More than half the $936,300 in value engineering savings reported at GD/Astronautics in the final six months of 1963 stemmed from efforts in an operations department group which has tried to make VE "a way of life."

This is the tool project section (Dept. 403) of production engineering under Manager G. A. Grossaint, where 16 projects with cost savings of $550,300 were implemented by year's end.

The section is headed by C. C. Pope, tool project engineer, with C. E. Roye, supervisor. G. M. Loudermilk, Dept. 406, is operations department value control coordinator, assisted by George Webber.

Departmental personnel were assigned to teams, each of which was given a savings target to achieve through value engineering applications.

The resulting "savings consciousness" paid off on such projects as a fuel fill duct assembly which scored $67,000 savings; in a value assurance project with net savings of $68,000 on a LO_2 tanking panel cabinet; and in completion of the torus ring improvement project with savings of $147,000.

Three projects completed by the section were included in a value engineering display prepared by the Department of Defense for exhibit in Washington, D. C.

In addition to the torus ring project (**General Dynamics NEWS**, Jan. 29) these are: a duct on which $61,000 was saved by substituting a one-piece drawformed tube for welded duct details; and a liquid oxygen duct elbow assembly produced by hydro-chemical forming instead of welding, to save $8,500 in firm and likely business potential.

Astro Jr. Riflemen Shade Poway Team

In its first competitive event Astro Rifleers junior rifle team, coached by Dave Farrelly, outpointed Poway Musketeers, 1,611 to 1,411 Feb. 15.

John Tramposh garnered high score honors for the Feb. 15 event and paced a team made up of Richard Ellis, Terry Farrelly, Bill Crosthwaite and David Farrelly Jr.

The Poway group, coached by Astro's Gus Graudums and Jerry Schmucker, was led by N. C. Holt.

Plans call for a return match March 21 at the CRA-ARA Rifle Range, Gillespie Field.

Gardeners to Learn Dwarfing of Trees

General Dynamics gardeners have a rare treat in store at the coming ARA-CRA Garden Club meeting, March 4, when they will have a chance to learn something of the ancient art of dwarfing trees.

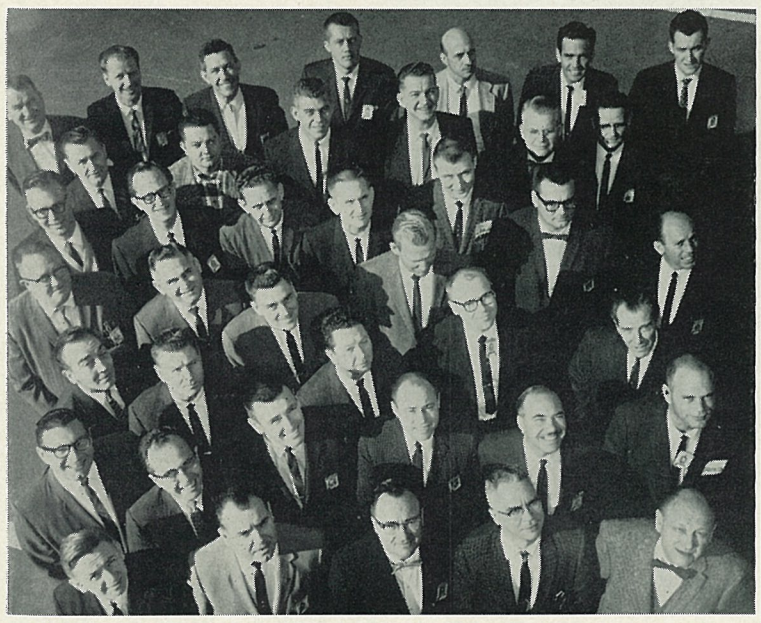
A Bonsai demonstration will be given by a local Japanese expert. Bonsai is the Japanese term designating the dwarfing of trees by special methods of trimming and culture for growing in small pots or containers.

ARA Commissioner Everett Henderson extends a special invitation to all interested GD people to attend the presentation next Wednesday night at 7:30 p.m., Floral Association Bldg., Balboa Park.

Plans are going apace for the annual joint ARA-CRA Rose Show to be held in the park on April 5. Classification lists will be available at employee services outlets by the middle of March.

NOTED PHOTOGRAPHER WILL DEMONSTRATE

Walter Harvey, noted La Jolla photographer, lecturer and teacher, will conduct a demonstration of portrait lighting under studio conditions and lecture on techniques at the March 1 (7:30 p.m.) meeting of the ARA-CRA camera clubs at the Photo Arts Building, Balboa Park. On tap for the photographers March 15 is a special model shoot.



LOOKING UP—Formal training in value engineering has been received by these GD/Astro employees who graduated last Friday from VE seminar 2-64. Some 400 more employees will follow in their footsteps as division pursues one-a-month seminar program for 1964.

Hudson Retires, Vultee Veteran

Over 50 old-timers from Convair and Astronautics divisions met to bid farewell to Jack M. Hudson of GD/Convair at a Valentine Day's luncheon at the Town and Country Hotel.

Hudson retired that date after more than 30 years with the company.

He joined the Aircraft Development Corp., predecessor of Vultee Aircraft, the summer of 1933, and transferred to Convair in 1947 when Vultee was absorbed into the Consolidated Aircraft Corp.

A design specialist in landing gear and mechanism design, Hudson devoted his efforts to practically every aircraft that passed through the San Diego plant in the last 30 years—all of the Convair-Liner series, T-29, Sea Dart, Pogo, R3Y, F-102/106, 880/990, and many experimental planes which didn't reach production.

Toasting the many years they had spent together in the company were three men who were co-workers with Hudson at Vultee Division: Nick Keough and Bob Trussell of Convair, and Pete Nagy of Astro. A desk set was given Hudson as a memento.

RECREATION HEADS ATTEND CONFERENCE

GD/Astronautics and Convair representatives were active Feb. 14-15-16 at San Francisco for the 14th annual National Industrial Recreation Association western region conference.

J. R. "Dick" Mitchell, chief of employee services at Astro, was chairman of the annual president's dinner session in his role as a N.I.R.A. vice president.

Ezra Johnson, president of Astronautics Recreation Association, took part in a session on "How Do You Do."

Convair was represented by J. K. Field, manager of personnel services.

Astro participants, in addition to Mitchell and Johnson, were Marty Stutz, ARA vice president; Jack Garrison, ARA treasurer; Cliff Kickbush, ARA secretary; and Commissioners Forest Erwin, Gil Hutter, Ludy Moeller and Bryan Weickersheimmer.

Wallman Will Chair Committee on QC

Charles Wallman, quality control administrator at GD/Convair, relieved Sam Braun, GD/Astronautics chief of product verification procurement, as chairman of the General Dynamics Quality Control Working Committee, which met at GD/Astro late last month.

The two-day session was opened by L. I. "Russ" Medlock, GD/Astro manager of quality control.

Moderating discussions and presentations which followed were W. A. Huot, GD/Electronics-SD; M. E. Walker and G. R. Bailey, GD/Convair; F. K. McCafferey, S. K. Chambers and D. W. Schacht, GD/Pomona; K. M. Boekamp and T. J. Marcella, GD/Astro; J. Treese, General Atomic.

Convair Continues Salvage Schedule

GD/Convair salvage yard will continue on its every-other-week Saturday schedule for employee sales for the time being, according to R. H. Lange, in charge of material sales.

(GD/Astro's yard will be open to sales only one Saturday each month throughout the remainder of the year.)

Schedule for the next month is:

GD/Convair—Feb. 29, March 14, 28.

GD/Astro—March 7.

WEIGHT ENGINEERS MEET TOMORROW

San Diego Chapter, Society of Aeronautical Weight Engineers (SAWE) will meet tomorrow (Feb. 27) at Red Fox Inn, Lafayette Motel, 2223 El Cajon Blvd. Social hour opens at 6:30 p.m., with dinner at 7:30.

GD Glider Fans Will Compete In Annual Meet This Weekend

A dozen or so glider enthusiasts from General Dynamics divisions in San Diego will take active part in this weekend's Annual Torrey Pines Glider Meet, some competing in meet events and others busy with the many ground chores.

More than 30 sailplanes from three states are expected to enter the soaring championships Saturday and Sunday (Feb. 29-March 1) at the Torrey Pines Gliderport. The 18th annual event is sponsored jointly by the Associated Glider Clubs of Southern California and San Diego Junior Chamber of Commerce.

Walter Mooney of General Atomic, as president of the San Diego glider organization, will have a major share in arrangements. As usual, Jim Spurgeon of Convair will be at his familiar post as master of ceremonies.

Astro men participating include Sterling Starr, Ernie Shattuck, Ray Brown and Tom Madigan. GD/Electronics participants are Les Howard, club treasurer, John Swinson and Dave Melvin. CRA Commissioner Don Larsen and Steve Kecskes are other Convair men involved.

As in past years, the John J. Montgomery trophy will go to the pilot who compiles the most points in all events. The Convair trophy is awarded for altitude. Other individual trophies include the Ryan Aeronautical Co. trophy for best duration flight; the Rohr trophy for spot landings, and the Solar trophy for best distance flight. Additional awards are given for bomb drop, dual distance, and individual club participation. The Helms' Junior Championship Award is presented the best-performing young pilot.

The meet will run from 10 a.m. to 5 p.m. both days. Only charge is $1 a car parking fee.

U. of Cal. Professor To Speak Feb. 27

Dr. Leonard D. Newmark, professor of linguistics at the new University of California at San Diego, will speak at tomorrow's (Feb. 27) meeting of the San Diego Chapter, Society for Programmed Instruction.

Dr. Newmark will discuss his research and findings on the application of programmed languages and outline his plans for the integration of programmed instruction into the curriculum at the new university.

Members and guests will meet at 7:30 p.m. in the GD/Convair main cafeteria, Pacific Hwy. Griff Williams of GD/Convair, chapter president, urges all interested GD people to attend.

Swissair's 8th 990 Leaves For Zurich

Swissair's eighth 990A Coronado transport left General Dynamics/Convair Feb. 7 for the airline's Switzerland headquarters at Zurich.

Piloted by a Swissair crew, the Convair jet airliner flew non-stop to New York and then across the Atlantic to Switzerland.

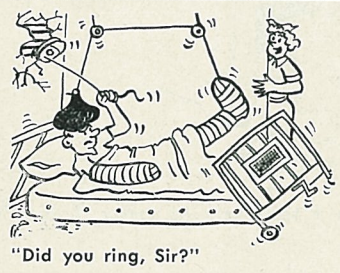
It joins Swissair's other 990As flying over the wide-spread network connecting Swiss bases of Zurich and Geneva with all parts of the world — South America, Africa, England, Germany, Sweden, Spain, Portugal, Italy, Egypt, Turkey, Middle East countries, across Asia to Japan, the Philippines and Hong Kong.

Seminar to Hear GD Value Experts

General Dynamics value engineering experts will outline principles and techniques of the cost reduction concept at a one-day VE seminar today (Feb. 26) sponsored by the San Diego Chapter, Society of American Value Engineers (SAVE).

Representatives from all San Diego industries have been invited to hear presentations and see displays in the Don Room of El Cortez Hotel.

H. P. Williams, GD/Convair value control manager, is program chairman with top value engineering administrators from GD/Electronics-SD, Astronautics, Convair giving presentations.



"Did you ring, Sir?"

Scholar Test Slated Mar. 14

A critical date is approaching for employees' sons and daughters who hope to qualify for General Dynamics Merit Scholarships upon entering college in 1965.

San Diego area students in their junior year of high school must arrange now to take the National Merit Scholarship Qualifying Test (NMSQT) on March 14. Students should apply for the test by contacting their high school principal's office immediately.

The NMSQT is a vital element for third-year students, as it is their only opportunity to join the Merit Scholarship race. Failure to take the NMSQT will bar students from any future hope of competition.

General Dynamics Merit Scholarships are stipends awarded on the basis of scholastic achievement. Amount of award is based on student need.

Society Will Hear Speech on Quality

Tickets to the March 9 meeting of San Diego Section, American Society for Quality Control, now are available to General Dynamics people.

Frank Moore, GD/Convair Plant 1, ext. 663; L. B. Settle, Astro main plant, ext. 2806; Bill Huot, GD/Electronics, Plant 1, ext. 2649; Ivan Kemper, GD/E Plant 2, ext. 36, will take reservations.

The dinner meeting will be held at Del Webb's OceanHouse with social hour at 6 p.m.; dinner at 6:30; and program at 8. Price is $3.50.

"Quality Control—Our Biggest Variable in Quotations" will be discussed by Glenn A. Walters, vice president of product research, Cubic Corp., sponsoring organization.

Las Vegas Humbled By Astro Couple

Two veteran ARA-CRA Gun Club members, Warner (Astro Dept. 780) and Edna Gatterman, walked away with a lion's share of trophies as well as Las Vegas' favorite coin—silver dollars—in a recent event there.

Competing in a handicap division (trap), Gatterman broke 96 of 100 birds to place second among 500 men contestants.

Edna broke 94 of 100 on consecutive days to win both divisions of a ladies' bracket.

Later, Edna Gatterman walked off with high lady honors during both second and third day events of the Rancho Angeles Trap and Skeet Club's 9th Mid-winter trap tournament held in Los Angeles.

Annual Jamboree Set For April 25

ARA Commissioner Marty Stutz has announced that AstroNauts, ARA square dance club, will host its counterparts at GD/Convair and GD/Pomona at the annual All-General Dynamics Jamboree, April 25.

The event marks the fourth anniversary of the ARA group, and will feature dinner and dancing to special guest callers in ARA Clubhouse.

Candidates Announced For Four ARA Posts

Members of the Employees' Council of Astronautics Recreation Association last week selected a slate of veteran recreation leaders as candidates to fill four elective offices for the coming year.

Additional nominations will be accepted during March when votes are cast. New officers will be installed in April.

Presidential candidates are Jack Garrison (Dept. 130-8) and Ludy Moeller (Dept. 191-0). E. H. "Bud" Davies (Dept. 963-4) and Cliff Kickbush (Dept. 971-5) are candidates for vice president. Secretarial nominees are Forest Erwin (Dept. 480-0), Bob King (Dept. 832-1) and Al Stone (Dept. 195-0). Chuck Ogle (Dept. 290-1) and Jim Shotwell (Dept. 662-9) seek the treasurer's post.

Garrison is currently ARA treasurer and commissioner of Astro Players, drama activity. He helped organize the drama group and has guided it through the years. Moeller heads the popular ballroom dancing activity and has served on the Council for the past two years.

Davies is commissioner of the combined ARA-CRA ice skating activity and previously served on the CRA Council. Kickbush, now ARA secretary, heads the Astro Divers, a skin diving group.

Forest Erwin guides representative bowling for ARA and doubles as softball commissioner. King serves as a representative-at-large and was previously fishing club commissioner. Stone organized and has guided archery throughout ARA's period of operation.

Ogle formed ARA's model airplane activity and is currently helping set up a new slot-racing layout. Shotwell heads the sailing group and has been instrumental in its tremendous growth and popularity.

ARA Calendar

(GD/Astronautics Recreation Association has some 40 activities in operation for employees. For information, call ARA Headquarters, ext. 1111.)

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AMATEUR RADIO — "Home brew" contest, Feb. 26, 7:30 p.m., ARA Clubhouse. Members bring single entry for judging. Prizes. Club constitution will be discussed; ratified.

ARCHERY—Shoots, 1.30 p.m., March 1, 15, ARA range. Meeting, 7:30 p.m. March 19, ARA Clubhouse.

BOWLING—Entries sought for championship tournament, Clairemont Bowl, April 4, 5, 11, 12. Forms available at employee services outlets.

BRIDGE — Meets each Friday night, 7:30 p.m., ARA Clubhouse.

FIFE & DRUM CORPS — Meets Wednesdays, 7:30 p.m., ARA Clubhouse.

GARDEN CLUB—Bonsai demonstration at meeting, March 4, 7:30 p.m., Floral Assn. Bldg., Balboa Park.

GLIDERS — Annual Torrey Pines meet, Feb. 29-March 1.

GUN CLUB — Regular shoot March 1, Gillespie Field Range.

SLOT RACING — Miniature raceway recently acquired by ARA. Commissioner Chuck Ogle, Plant 19, ext. 591, seeks volunteers to set up course, place in operation.

SQUARE DANCING — Beginners' class open March 3, 10, 17, Classes each Tuesday, 8 to 10 p.m., ARA Clubhouse.

Sanderlin Pistol Winner by a Point

Ralph Sanderlin nudged Roscoe Anderson 295 to 294 to win master class of an ARA Pistol Club match at San Diego Police Pistol range earlier this month.

In expert category, John Bennett fired 275 and Bill Dittmann, 272, while Bill Worthington topped Byron Clapper, 260-241 in sharpshooter class. In the marksman bracket, it was W. R. Ginsky over Lyle Ewing, 257-238.

Al Schindler won a Center Fire match with 279, followed by J. S. Knutson with 277, Sanderlin with 269, and Warren Ranscht, 261.

Casting Completed For Players' Show

Casting is complete and rehearsals under way for the Astro Players' March 26-27-28 and April 1-3-4 and 8-10-11 production of John Patrick's "The Curious Savage."

Lillie Mae Barr heads the cast. Others include Myrll Hamnquist, David Van Buskirk, Bob Collins, Betty Smith, Dixie Quesenberry, Beverly Blumling, Ted Cottrell, Kay Bunnell, John Potye and Annabel Audet.

Tickets are available through employee services, ARA commissioners and Astro Players. General admission tickets (good any night) are $1. Reserved section tickets (for specific performances) are $1.50.

Production will be at ARA Clubhouse at 8:30 p.m.

Bowl Tourney Rules Agreed

Rules covering ARA's sixth annual plantwide bowling championship have been established and entries are being accepted.

Competition will be at Clairemont Bowl. Team events will be held April 4 (3 and 6:30 p.m.) and April 5 (12 and 3 p.m.). Singles and doubles follow April 11 (1, 3:30 and 6 p.m.) and April 12 (12:30 and 3 p.m.).

There will be at least one award for every 10 entries!

Entry forms are now available through employee services outlets and bowling establishments where ARA-sponsored leagues are in action.

Team events will be held for both men and mixed quintets. There will be men's and women's singles, men's and women's mixed doubles and all-events for both men and women. Those entering singles events must bowl doubles and vice versa.

Handicaps will be based on 1962-63 book averages.

Entry deadline is midnight, March 15.

Fees are $3 per person, per event, except the optional all-events which will be $1.

Bill McHorney, ext. 1111, is tournament director.

Workouts Commence For Open Softball

Workouts begin at 7 p.m. March 4 at ARA softball field for the Astro Rockets, a representative team selected to compete this year in the San Diego Open softball league.

Experienced softballers desiring to try out for the team may appear at that time or contact ARA Commissioner Forest Erwin, ext. 3509, or Coach Bob Lange, ext. 1241, for details.

Last season this team placed second in the Southern California Municipal Athletic Federation tournament, playing against some of the top softball nines in the state.

Archers to Gather For Sunday Shoot

Astro archers will gather at 1:30 p.m. Sunday (March 1) and again at the same time March 15 for regular shoots in the ARA Archery Range area east of Plant 71.

A regular business meeting is slated for 7:30 p.m. March 19 in ARA Clubhouse.

Shoots are open to all ages and classes with special instruction offered free one hour before regular shooting sessions.

GRADUATES—Shown in full square-dance regalia are recent graduates of AstroNauts beginners' class which opened last fall. Group will now join senior dancers in Thursday night sessions, as a new novice class gets under way March 3, 10 and 17. (Photo by Jud Jones.)

Dancers Beckon To Newcomers

It's that time again.

On March 3, 10 and 17, AstroNauts, ARA square dance group, will open its doors to newcomers in a new series of beginners' classes.

Only yesterday (Feb. 25) last fall's class of over 50 beginners graduated to become full-fledged members of the advanced AstroNauts group.

The square dancers open beginners' classes only twice a year, in spring and fall. Classes meet Tuesdays in ARA Clubhouse, while the advanced group gather there each Thursday evening.

Tuesday instruction is offered from 8 to 10 p.m. Veteran instructors Dot and Van Vander Walker carry the class from simple walk-throughs to the more intricate steps of square dancing as the class progresses.

Advance registration is not required. Dancers need only to report to the Clubhouse, promptly at 8 p.m. on one of the three "open" nights. While this is primarily a "couples" program, singles will be accepted in equal numbers.

The very nominal instruction fee is paid by the week.

Bermuda Trip Tourney Prize

Plans for participating in a National Industrial Recreation Association "par" bridge tournament have been formed by the ARA Bridge Club. The event will be staged at ARA Clubhouse March 20.

Played simultaneously across the nation, the tournament will feature a set of pre-arranged deals. National winner of this event will fly to Bermuda to take part in an international event for the Charles H. Goren Award. Information is available through Art Saastad, ext. 1111, Bob Rustad, ext. 4285, or Gene Alford, ext. 4161.

Winners in the club's Feb. 7 master point night were: Section "A", N/S, Bob Combs and Jim Hanratty, E/W, Pete Peterson and Dave Silverman; Section "B", N/S, Mr. and Mrs. W. B. Grindstaff, E/W, Mr. and Mrs. John Wamser.

The Feb. 14 winners in Section "A", N/S were Mr. and Mrs. Grindstaff, while Mr. and Mrs. Vance Walsh won E/W. Section "B", N/S, was won by Mr. and Mrs. David Krause with Walker Matlock and Alex Davidson winning E/W.

Astro Chess Club Offers Invitation

Astro's ARA Chess Club has set in motion a bid to attract the casual, as well as experienced, chess players to their 7:30 p.m. weekly sessions held on Thursdays at ARA Clubhouse.

All types of players, from beginners to advanced, are invited. They will be placed in foursomes composed of players of their own ability to play a round robin series under tournament rules.

Details are available through Bud Fagan, ext. 3220.

Sports & Recreation

Hurry up and Nominate In Astro's 'Fairest' Race

Only two days remain in which to nominate Astronautics' "fairest" to compete in the annual contest to select a "Miss or Mrs. ARA." Entries must be filed by Friday (Feb. 28).

Forms for nominating candidates are available at all employee services outlets. They must be completed in full, including the name of the candidate, plus the person nominating the individual.

All Astro employees, Air Force and NASA employees, plus the employees of associate contractors assigned to Astro permanently are eligible, as well as the wives of employees in any of the groups mentioned. Nominations may be submitted by employees of any of the groups mentioned.

In the past this event has drawn from 50 to 120 candidates.

All candidates will appear at 7:30 p.m. March 4 in ARA Clubhouse for preliminary judging.

Finalists will serve as models at a March 18 style show during which a second panel of judges will select a queen and four attendants. Winners will receive loving cups, the traditional flowers and a crown. They will also reign over all Astronautics Recreation Association events for the coming year.

The March 18 style show, billed as "Fashion Satellite," will be staged in the Astro reception center (Bldg. 2). Fashions will be provided by Ballard and Brockett. Tickets are $1 each and will be available March 2 at employee services outlets.

AstroNauts Spend Mountain Weekend

An event so successful that it's now being considered an annual affair drew over 100 members of AstroNauts, ARA square dance club, and their families to Camp Davidson near Julian recently for dancing and games.

The event, Feb. 7-9, was a weekend camp-out which featured lodging plus three meals at a cost of only $4.50 each.

And Still Champion, Airmailers Chalk Up 27th Straight Victory

Airmailers, Dept. 170-9, last month copped their third consecutive trophy as plant flag football champions.

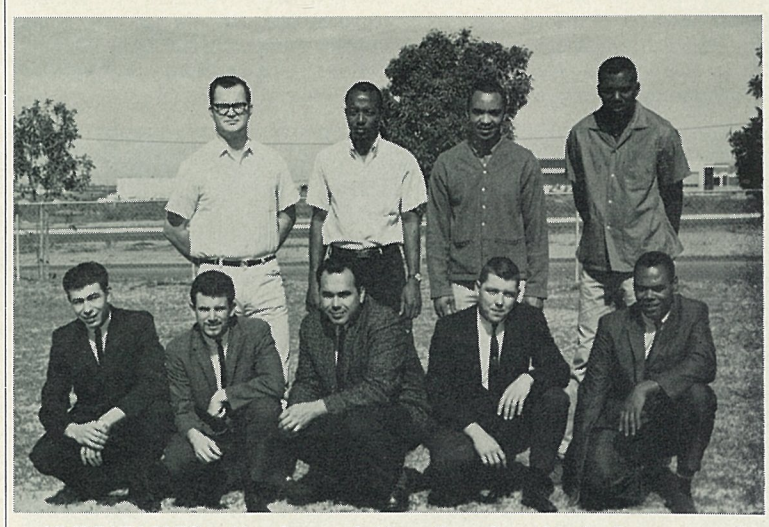
In the deciding game, Airmailers downed Material Operators, Dept. 830, 33-13 to conclude their third season and 27th league game without a loss!

The three-time winners were captained by Jim Blake, with team members Chuck Adams, Van Brown, Frank Bucheit, James Clinger, Jim Everidge, Claudell Howard, Charlie Johnston, Rudy Labastida, Charles Lawson, Don List, Carl Root and Harvey Wells.

Eleven teams competed in two leagues.

Comprising the Monday League with Material Operators, league champs and second in the plant championship race, were Beavers, Dept. 344-2, with Captain Dennis Brown; Thundering Herd, Dept. 524-5, Paul Mooney; Fumblers, Dept. 835, Ralph Morton; Raiders, Ryan Aeronautical Co., Bill Malone.

Thursday League, led by Airmailers, included Astro Stars, Dept. 966-5, Mike Kieklak; Ramblers, Dept. 835-4, Leon Canales; Reactors, General Atomic, Dave Blevins; Missing Links, Dept. 101-2, Carl Root; and Finks, Dept. 962-0, Griff Rausch.



UNBEATABLES—Members of Airmailers flag football team, undefeated in three seasons and 1963 plant champions, include (standing, from left) Carl Root, Van Brown, James Everidge, Charles Lawson; (kneeling) James Clinger, Don List, Rudy Labastida, Frank Bucheit, James Blake, captain. Not shown, Chuck Adams, Charles Johnson, Harvey Wells, Claudell Howard.

Stromberg-Carlson Looks Back on 70 Yrs. Of Exciting History

(Continuing a series of full-page articles dealing with individual General Dynamics divisions, this feature sketches background and present of Stromberg-Carlson of Rochester, N.Y.)

Two Swedish immigrants in Chicago watched the changing telephone scene with interest.

Independent telephone companies were springing up across the country, some to compete with Bell companies and others to bring telephone service to areas which had none.

The year was 1894. Alfred Stromberg and Androv Carlson thought they could make a better telephone instrument. With ingenuity their principal asset, they pooled $1,000 and organized a new company. Their fame as a quality manufacturer soon spread. In 1902 they were persuaded to move to Rochester, N. Y., and a few years later they sold their successful company to local investors.

Today, telephones are just one aspect of the broad communication business which is Stromberg-Carlson's, but the independent telephone industry continues as the principal market. Products of Stromberg-Carlson, now a division of General Dynamics Corporation, cover the entire communications field and provide voice and data transmission via wire and radio link. S-C communication systems serve Dulles International Airport, Cape Kennedy and all Titan missile bases. More than 3,800 S-C telephone exchanges are in use throughout the country.

Stromberg-Carlson is headed by John H. Voss, division president, who himself holds 62 patents in the field of telecommunications.

S-C CAN BOAST MANY "FIRSTS"

Stromberg-Carlson "firsts" in communications are many. Famous for pioneering, S-C introduced the first self-contained (bell-in-the-base) telephone in this country in 1931, the first dust-free dial in 1946, the first completely waterproof telephone in 1949 and the first solid-state electronic switchboard in 1956.

The fast pace of modern business demands the most advanced communication techniques and Stromberg-Carlson provides switchboards with flexibility to meet any need. A Touch-Lite turret, smaller than a typewriter, is manufactured for use by an office receptionist and provides visual indication of the status of all lines and requires only a touch of a key and a twist of a dial to extend, transfer and originate calls. Message-waiting systems provide complete motel-hotel communication services. Multi-line telephones place miniature switchboards on executives' desks.

Businesses in several locations are now served by electronic private branch telephone exchanges. These pioneer installations of Stromberg-Carlson's DYNALOGiC switching systems ushered in a new era in telephony — electronic communications. In 1962 this Rochester division installed the world's first electronic dial telephone office to serve an entire community.

Essentially, special purpose computers which make connections more rapidly than electromechanical systems, these DYNALOGiC electronic systems provide improved transmission and many new subscriber services. Call-forwarding abbreviated dialing and even Touch-Button telephones are now realities.

WW I SPARKED NEW PRODUCTS

Until World War I the company manufactured only telephone equipment, but during that war it turned its effort to all-out production of many types of communications equipment for the government. Specially designed telephone sets were provided for artillery observers and gun plotters, camp switchboards, combination field telephone and buzzer telegraph sets.

Stromberg-Carlson telephones were installed in the palace of Versailles to carry official reports of the peace conference to a waiting world. A quarter of a century later, this precedent was followed at the Nuremberg trials in Germany. At the formal surrender of Japan aboard the USS Missouri, the step-by-step activities during the historic capitulation were announced to crew members over Stromberg-Carlson sound equipment.

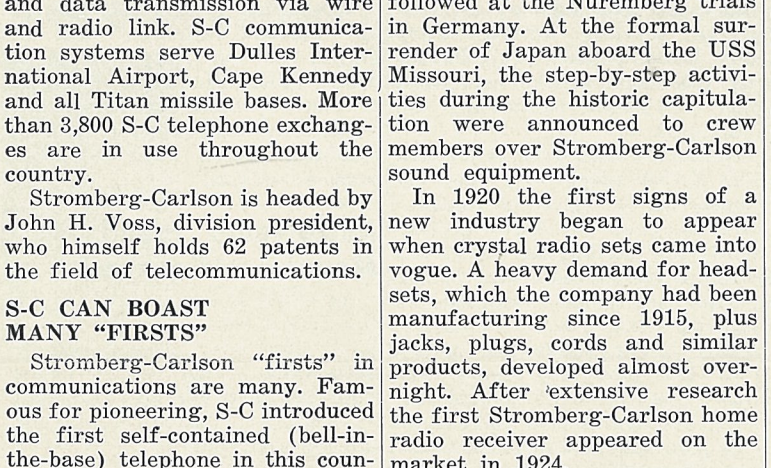
In 1920 the first signs of a new industry began to appear when crystal radio sets came into vogue. A heavy demand for headsets, which the company had been manufacturing since 1915, plus jacks, plugs, cords and similar products, developed almost overnight. After extensive research the first Stromberg-Carlson home radio receiver appeared on the market in 1924.

In 1926 Stromberg-Carlson became the first manufacturer to provide a phonograph jack in the radio chassis. In 1938 the company pioneered in the development of frequency modulation (FM) radio, and then came television. It was 1939 when the first Stromberg-Carlson television sets went on the market in New York City, the only area then with telecasts. Paging, intercommunication and sound equipment product lines were developing simultaneously.

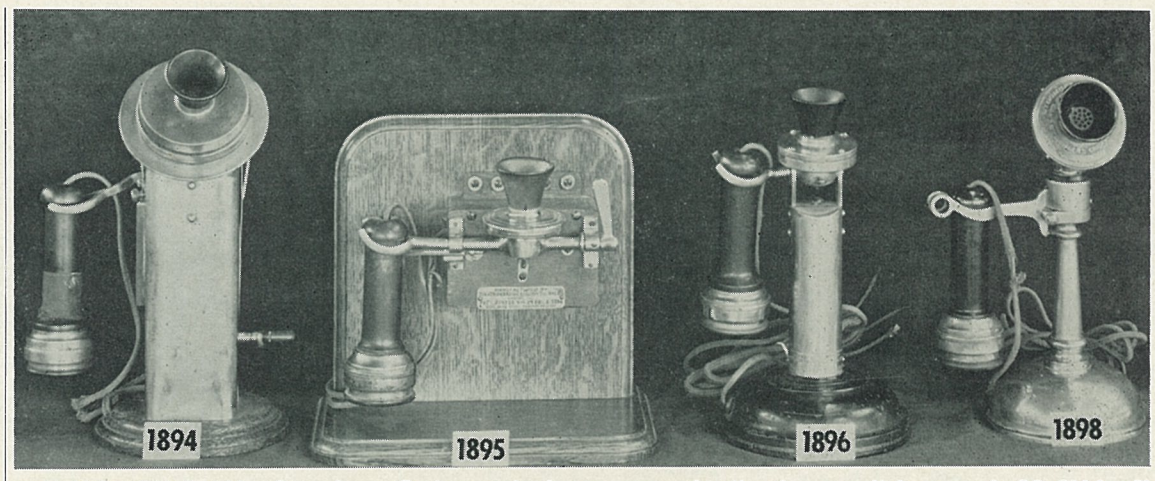
During World War II, Stromberg-Carlson's efforts again were devoted to meeting military requirements. Air navigational devices, radar detectors, airborne radio beacon markers, shipboard battle announcing systems and mobile radio receivers and transmitters came off the assembly lines.

EXPANSION OF S-C FOLLOWS MERGER

In 1955, Stromberg-Carlson merged with General Dynamics Corporation, becoming the communications arm of this billion-dollar corporation. Expansion followed quickly.



OVER THERE — In both World Wars Stromberg-Carlson followed the colors to the battlefield. Above, Doughboys in France in 1917 fire field piece. Stromberg-Carlson field telephones contributed to battle communications.



HELLO, CENTRAL!—Stromberg-Carlson telephones were the "cat's meow" (or was it 22 Skidoo?) away back when . . . And still ahead of the pack nowadays they're "tough, man, tough."

The division was heavily engaged in electronics. Aircraft landing aids, automatic test equipment, navigation systems, data devices and missile guidance equipment were just a few of the electronic systems designed in the division's laboratories. So great were the requirements for these systems that the division discontinued the manufacture of television receivers, home radios and high fidelity equipment to devote its entire facilities to developing advanced telecommunication, electronic and commercial sound equipment. Business grew and Rochester employment increased.

Meanwhile, the telephone industry throughout the country was rapidly converting to dial equipment. This market was growing at a pace faster than even the mushrooming electronic industry. The independent operating telephone companies, Stromberg-Carlson's principal customers, were serving communities with great growth patterns.

ACCENT PLACED ON TELEPHONY

To develop this market General Dynamics reorganized its Rochester operations in 1961 and created two separate divisions. Electronic equipment for the military and commercial sound equipment were assigned as product lines to General Dynamics/Electronics-Rochester and are now in production at that division's plant at 1400 Goodman Street North, Rochester.

All telecommunication products, designed for the independent telephone industry and certain industrial and government users, became the product lines for Stromberg-Carlson at 100 Carlson Road, Rochester. Thus, the original corporate name again was applied essentially only to products for the telephone industry. But what a change these products are from the equipment produced by two Swedish inventors at the turn of the century!

Touch-Button telephones, by which the subscriber depresses keys rather than turning a dial, are now in use.

Multi-line telephones handle many lines on one instrument.

Stromberg-Carlson's multiplex systems stack 240 channels on a single transmission path.

Microwave carries data and voice across the roughest terrain.

Automatic toll ticketing equipment makes direct distance dialing practical for independent telephone companies.

Electronic switchboards which nearly "think" for themselves provide services hitherto thought impractical to many subscribers.

With an electronic telephone system a person who must be away from his telephone can dial a special digit and the number of the telephone to which he wishes his incoming calls forwarded. All future calls to his telephone then automatically ring at the phone where he will be.

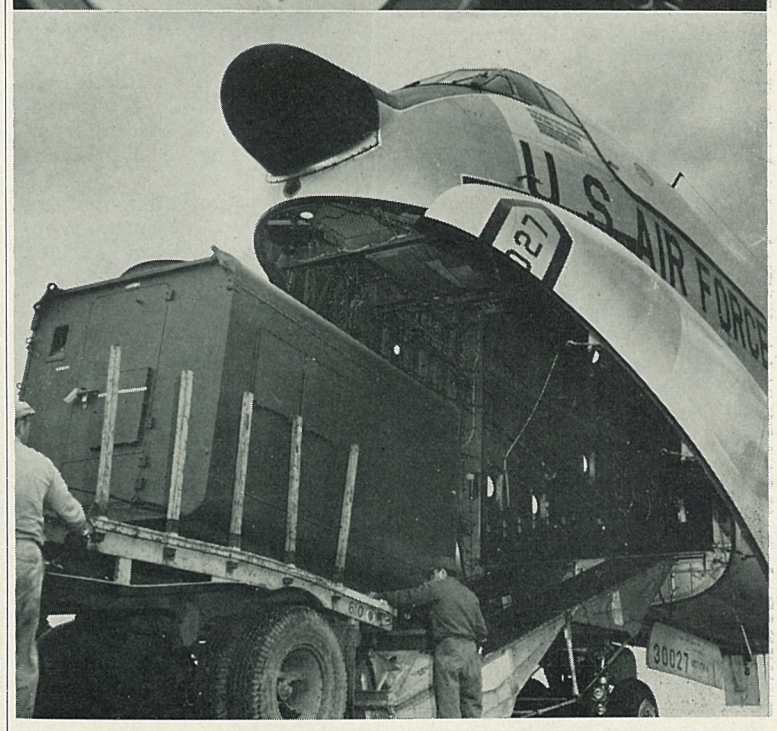
Direct inward dialing makes it possible to reach business extensions without going through an operator.

As Stromberg-Carlson begins its seventh decade, its strength still lies in highly skilled workers, men and women who have pride in craftsmanship. Many have long company service records. The division's Quarter Century Club is one of the largest among manufacturers of telecommunications products.

S-C Products Cover Wide Range In Telecommunications Field

Stromberg-Carlson's products span the broad field of telecommunications and are used by telephone operating companies, industrial firms and government. They include:

Turnkey communication systems.
XY electromechanical switchboards.
DYNALOGiC electronic switching systems.
Electronic register senders.
Voice and data transmission equipment.
Telephone instruments.
Telephone components — handsets, relays, switches.
Toll ticketing systems.
Communication control consoles.
Trailer-mounted telephone systems.
Test equipment.
Carrier and multiplex equipment.
Message circuit dialing systems.
Military research and development.



A FAR CRY—Touch-Button telephones (top photo) in production at Stromberg-Carlson are checked by Joan Wenzel (foreground) and Barbara McGowan. Compare these to S-C's first phone introduced in 1894! Military also is Stromberg-Carlson customer. In lower photo "hut" complete with communications systems is picked up at Rochester by USAF plane for rush delivery.

GD

ASTRONAUTICS EDITION

GENERAL DYNAMICS NEWS

Vol. 17, No. 6 PUBLISHED BY GENERAL DYNAMICS CORPORATION Wednesday, March 11, 1964

All Divisions to Push Bond Sign-ups in May

General Dynamics Corporation's 1964 U. S. Savings Bonds campaign will take place early in May, simultaneously at all divisions.

"Share in America" will be the campaign slogan this year.

Algie A. Hendrix, vice president-industrial relations, said the drive will be coordinated at all locations and involve advance publicity and direct contact with all employees not currently buying bonds by payroll deduction.

"Results of the 1963 campaign were gratifying and earned honors not only for the Corporation but for a number of divisions as well," Hendrix reported. "However, we intend to do even better this year."

Latest figures on participation show Astronautics division in front with 73 per cent buying bonds regularly, followed closely by Convair with 71 per cent. Other leaders include Fort Worth with 66 per cent, Pomona at 64 per cent and GD/Electronics-San Diego, 60 per cent. Corporate Office buying stands at 66½ per cent.

Regular bond buying through payroll deduction advanced substantially at all divisions as a result of 1963 drives.

TREASURY AWARD — General Dynamics has received Treasury Department's "Minuteman Award" for employee performance in buying U.S. Savings Bonds by payroll deduction. At ceremony in New York Office were, from left: Sy Gruber, Manhattan area representative, Savings Bonds Division; Algie A. Hendrix, General Dynamics vice president; Howard Smith, New York State director of Savings Bonds Division; Roger Lewis, General Dynamics president; Edwin C. McManus, GD personnel administration.

Beware Auto Thieves! Lock Cars and Doors

Astronautics drivers utilizing company parking lots, particularly those at Plant 19, might well heed a word of caution issued this week by industrial security—lock your cars!

An alternative would be removal of all personal property to the safety of locked car trunks or, better yet, the greater safety of leaving the property at home.

Recent thefts, pilferage, and acts of vandalism occurring on parking lots have prompted warning.

Especially vulnerable is the Plant 19 lot due to the distance from security guard posts and its close proximity to heavy traffic and nearby housing.

Recently, industrial security made a special visual inventory of cars on the Plant 19 lot. The report showed many transistor radios, tool boxes, clothing articles, car parts and accessories, etc., in plain view. Some cars were left with keys in the ignition!

"Drivers who leave personal property in their cars, locked or unlocked, are inviting trouble and loss," said W. E. Bowman, manager of industrial security. "This is a situation which can grow gradually worse, unless employees discourage thefts by taking proper precautions."

Recovery of stolen property is difficult; however, personal property has been recovered after being taken from parked cars. Employees are urged to report thefts, vandalism, etc., to security guard control centers, located in Bldg. 6 at Plant 71 and in the old fire station between Bldgs. 2 and 4 at Plant 19.

Project 'Red Heat' in High Gear As Key Men Gather at Astro

"Project Red Heat" swings into high gear this month.

Red Heat is the modernization or updating of all Air Force operational facilities equipped with the series "F" Atlas weapon system (GD/NEWS, Nov. 27, 1963.)

Final program emphasis was applied last month when 65 key participants met at GD/Astronautics. During the two days of talks every phase of the program was covered and finalized.

"Highly successful, extremely helpful" was the joint opinion of the co-hosts—Col. Malcolm K. Andresen, AFPR, and W. L. Van Horn, Astro vice president and program director—AWS.

In his conference-opening remarks Col. Andresen urged mutual understanding, special attention to cost control, assistance in

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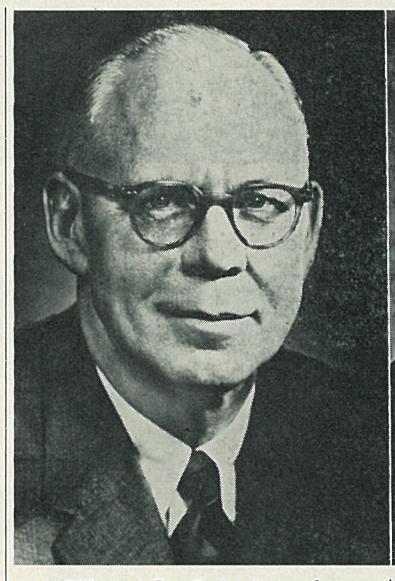
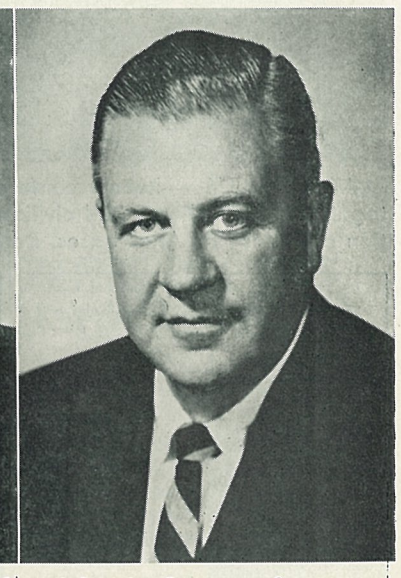


William C. Bolenius, former vice chairman of American Telephone and Telegraph Co.

David Packard, president of Hewlett-Packard Co. of Palo Alto, Calif., electronics manufacturer.



John A. Sargent, former executive vice president of General Foods Corp.

'Do Good Work' Program Earns Astro's Salute

GD/Astronautics management and the division's key customers joined last month to salute the Craftsmanship program and the winner of the first monthly competition: plaster, plastics and foundry (Dept. 454).

Part of the division-wide "Do-Good-Work" effort, the Craftsmanship program was sole subject of President J. R. Dempsey's monthly management meeting Feb. 26 at the main plant.

Presentation of the January Craftsmanship plaque was made by Dempsey to M. O. Ramsey, general foreman, who accepted on behalf of Foremen G. L. Olson and W. R. Walker, and all Dept. 454 employees.

Dempsey characterized the Craftsmanship and Do-Good-Work programs as "positive motivational forces to recognize our people who have done good jobs." He praised the Dept. 454 philosophy of "paying attention; of doing their work right, before turning it over to inspection." He noted Quality Reports indicating a dramatic reduction in the department's rejection rate during preceding months.

Col. Malcolm K. Andresen, Air Force Plant Representative, expressed the customer's interest in the program.

"The Air Force has always recognized the importance of flawless individual performance as a prerequisite to attaining a common goal," he said. "We want each employee to realize that his personal performance determines, in part, how GD/Astro rates with its customers."

Amplifying the customer's viewpoint was J. L. Stephenson, chief of NASA contracts at GD/Astro, representing Ronald Rovenger who heads the local space agency office. He reiterated that "you can't inspect quality into a product; you have to build it in," and pointed out that Federal economy measures leave no room for "second tries" in aerospace programs.

"It is appropriate," Stephenson said, "that you have chosen as the theme of this program, the words of Astronaut Gus Grissom who told you that the most important thing you can do is to 'Do Good Work.'

"Grissom's life depended on this; our livelihood depends on it."

P. I. Harr, GD/Astro director of reliability control, offered fur-

(Continued on Page 2)

Free Films Continue Tuesdays, Thursdays

Health and medical topics are featured in free movies shown Tuesdays, 11 a.m. to 1 p.m., in Room 3, Bldg. 17, at GD/Astro's main plant. At the same time, Thursdays, industrial films are shown.

Employees are invited to attend during lunch periods. Films are continuous, starting every 30 minutes.

SPOTLIGHTED — General Foreman M. O. Ramsey, center, representing all Dept. 454 employees, received plaque from President J. R. Dempsey (left) citing department as "Craftsmen-of-the-Month" for January. Ramsey was congratulated by J. L. Stephenson, representing Ronald Rovenger, head of local NASA office (second from left). Col. M. K. Andresen, AFPR (second from right), and P. I. Harr, director of reliability control (right).

Distinguished Executives Join Board

William C. Bolenius, David Packard and John A. Sargent have been elected directors of General Dynamics Corporation, Roger Lewis, chairman and president, announced last week.

Sargent, formerly executive vice president of General Foods Corporation, has also been appointed a vice president and senior financial officer of General Dynamics, Lewis disclosed.

Bolenius retired last year as vice chairman of American Telephone and Telegraph Company. Packard is president of Hewlett-Packard Company of Palo Alto, Calif., manufacturer of precision electronic equipment.

* * *

Sargent spent six years with General Foods, joining the company as vice president-finance in 1957. He was named executive vice president in 1959 and was elected a director later that year.

Earlier, he had served as president and a director of Diamond Alkali Co. from 1954 to 1957, having joined that company following service in World War II. Commissioned as a captain in 1942, he was discharged as a colonel. He received the Legion of Merit for his work as a staff officer in the Production Division of the Army Service Forces.

Born in New York City in 1909, Sargent received a B.S. degree in applied economics from Yale University in 1933. Prior to World War II, he was a sales executive with American Radiator & Standard Sanitary Corp. and Republic Steel Corp.

* * *

A native of Auburn, N. Y., Bolenius began his 42-year career with the Bell System in 1921 as a traffic inspector with the New York Telephone Co. in New York City.

After serving in various positions throughout the state, he was named vice president and general manager for upstate New York in 1943. Three years later, he was appointed president of the Wisconsin Telephone Co.

He was appointed a vice president of American Telephone and Telegraph Co. in 1948, executive vice president in 1958 and vice chairman in 1961. He served as a director of American Telephone and Telegraph and Southwestern Bell Telephone and Indiana Bell Telephone from 1959 until his retirement as vice chairman in December, 1963.

Bolenius is also a director of Morgan Guaranty Trust Co. of New York, International Nickel

(Continued on Page 6)

AT THE HELM — Recent conference held at GD/Astro brought together key Air Force and civilian figures involved in modernization of series "F" Atlas bases. Representatives (65 in all) finalized plans for current program which stretches throughout most of 1964 and includes field teams at each of six silo-type bases. Program is called Project "Red Heat."

Log Book Entries

G. L. Helling, Dept. 140-2, was most recent Astro man to receive 25-year service emblem for quarter century of service with company.

Service Emblems

Service emblems due during the period March 1 through March 15.

Thirty-year: Dept. 811-0, C. C. Farnsworth.

Twenty-year: Dept. 101-6, S. J. Wooters; Dept. 382-1, W. V. Ohland; Dept. 714-0, J. C. Huff; Dept. 759-0, C. G. Bracey; Dept. 830-0, D. E. Rheaume; Dept. 835-4, H. A. Heink.

Fifteen-year: Dept. 557-0, O. F. Oldendorph; Dept. 662-7, H. E. LaNois; Dept. 759-0, F. J. Bougeois Jr.; Dept. 833-1, Doris S. Passenheim; Dept. 953-3, L. E. Laffen; Dept. 976-3, J. D. Pickett.

Ten-year: Dept. 033-1, P. A. Bergin; Dept. 144-3, R. H. Poulsen; Dept. 250-1, B. G. Bourguignon; Dept. 290-4, L. O. Marine; Dept. 344-3, V. F. Harris; Dept. 451-0, Luigi Lacava; Dept. 454-0, A. F. Morris; Dept. 526-0, Norman Langley; Dept. 580-1, J. W. Hopkins; Dept. 662-6, R. L. Ortega; Dept. 759-0, J. E. Luzader, W. M. Tripp; Dept. 961-2, R. W. Stoker; Dept. 987-2, James Morgan; Dept. 988-3, W. A. Ziehl.

ALTUS AFB

Twenty-year: Dept. 391-3, L. M. Barnes.

LINCOLN AFB

Twenty-year: Dept. 389-3, W. A. Wigington.

Fifteen-year: Dept. 389-3, J. T. Lewis.

Papers Presented

BRANDENBERG—W. M., Dept. 596-0. "The Directional Spectral Emittance of Surfaces," NASA, NBS, Univ. of Calif. Conference on Thermal Radiation of Solids, San Francisco, March 4-6.

HAUSRATH—A. H., Dept. 557-1. "Development of Shell Instability Theory for Aerospace Vehicles," Iowa State University Mechanics Seminar, Ames, Iowa, March 5.

WILSON—P. E., Dept. 557-1. "Nonlinear Problems in Structural Mechanics," AIAA Student Chapter, South Bend, Ind., Feb. 27.

Retirements

CLARK—H. R., Dept. 975-5. Seniority date, June 13, 1953. Retired Feb. 1.

RUNYAN—Louis V., Dept. 835-2. Seniority date, Jan. 11, 1956. Retired March 1.

Personals

Our sincere thanks to those who made the generous contribution to St. Michaels Church (Poway) in memory of Florence Draper (Dept. 524-1). Your thoughtfulness and kind expression of sympathy will be remembered always.

The Draper family: Mrs. Anna Heldt (mother); Mrs. Dorothy Ross (sister)

* * *

Thank you so much for the beautiful spray of flowers in memory of Stan Walter (Dept. 424-1). My daughter and I greatly appreciate your kind expression of sympathy.

June Walter

* * *

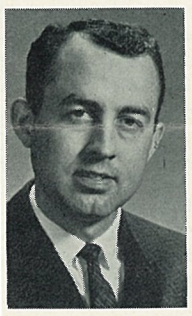
My children and I wish to express our sincere appreciation to our many friends at GD/Astro for the expressions of kindness and sympathy on the passing of our beloved husband and father, Steve Warner (Dept. 210).

Herta Warner (Dept. 141-2)

KEY MEN — Photographed during "F" updating conference at San Diego are (photo at left) Maj. M. A. Bigelow (BSD), Col. R. L. Wells (SBAMA). Lt. Col. R. L. Poutre (SAC), W. L. Van Horn (Astro) and Col. M. K. Andresen (AFPR at Astro). In photo at right, E. J. Huntsman, far right, manager of activation and support, and R. G. Daly, chief of support field modification, left, meet with base managers C. R. Jackman (Schilling), R. D. Wasser (Plattsburgh), D. A. Munizza (Dyess), E. H. Southard (Lincoln), R. A. Clark (Walker), J. J. Williams (Altus).

Arch Rambeau Gets New Title

Archie H. Rambeau last week was named manager of operations control (Dept. 210) for GD/Astronautics by E. D. Bryant, vice president-operations.



Archie Rambeau

Rambeau joined GD/Astro in 1959 after receiving an AA degree from Compton (Calif.) Junior College, and a BS degree from San Diego State College, both in business administration.

Following assignments as manufacturing analyst and master scheduler in base activation, he moved to Dyess AFB in 1961 as task control supervisor; was named chief of scheduling and analysis—base, in 1962.

Later the same year he returned to San Diego as project administrator in Dept. 152, and in May, 1963, became project administrator in contracts (Dept. 110-0).

In July, 1963, he was named chief of service planning and control, support projects (Dept. 300), a post he held until his recent appointment.

Births

JACKSON—Son, Mark William, 7 lbs., 8½ oz., born Jan. 13 to Mr. and Mrs. H. A. Jackson, Dept. 143-3.

Deaths

DYESS AFB

HUBBARD—Charles, Dept. 392-3. Died Feb. 24. Survived by wife, Ruby, three children.

Project 'Red Heat' in High Gear As Key Men Gather at Astro

(Continued from Page 1)

problem areas and the setting of high objectives. He acknowledged the key to the program was in field efforts.

Van Horn recognized in the group more years of Atlas ICBM experienced than he had ever seen assembled at one point. He pledged the all-out support of all Astronautics and lauded the work of field teams to date.

During special sessions conferees exchanged ideas, discussed problems, made special recommendations and took part in briefings covering every step in the program that will continue throughout most of 1964.

Forty-six Air Force representatives were on hand for the talks. Heading the organization participating were: Col. Andresen for the Western Contract Management Region (WCMR); Col. R. L. Wells, San Bernardino Air Materiel Area (SBAMA); Lt. Col. R. L. Poutre, Strategic Air Command (SAC); Maj. M. A. Bigelow, Ballistic Systems Division (BSD); and Van Horn, GD/Astronautics.

In Project Red Heat BSD has assigned Astronautics the role of management contractor with SBAMA providing Air Force management surveillance and WCMR, through the Astro AFPR, contract surveillance. SAC is the using command.

Over the past months field teams have been growing at each of six series "F" Atlas bases, with full teams expected to be on hand at each base this month. They include slightly less than 370 Astronautics technicians, plus smaller numbers from each of the participating Air Force functions.

Utilizing parts and equipment brought in from Astro and SBAMA, the field teams are making about 400 changes at each launch site. They cover improvements on the Atlas ICBM, its aerospace ground equipment, systems test equipment, and launch equipment. Changes represent the latest in missile technology resulting from research and recent flight tests. When completed, each site as well as the support service facilities at each base will be in the most up-to-date state of readiness possible.

Red Heat is actually one giant program being carried out at a number of different points. That is, rules governing changes and the changes themselves along with schedules, planning, technical data, etc., are identical from base to base.

Schedules call for elements of the program to progress at all bases simultaneously. Crews move into a select number of sites at each base to perform updating on a two-shift basis. Once the site is completed, the crews then shift to another site. Thus, a minimum number of sites are out of operational status at any one time.

Astronautics field teams report, through eight major section heads, to an on-site base manager. A vast majority of the members of each team are veterans of initial activation of Atlas bases.

'Good Work' Program Earns Astro's Salute

(Continued from Page 1)

ther comment, stating his department (which administers scoring of the Craftsmanship competition) was "gratified by the enthusiasm with which the program has been accepted, and the interest it has aroused at off-site bases and among our suppliers."

Harr praised NASA and Air Force cooperation in establishing the Do-Good-Work program, and emphasized that "it takes total teamwork to achieve, while failures can be caused by individuals." He restated his department's role in the program, not only "scorekeeping," but as an agency to assist all departments in their work toward producing high reliability, high quality products.

President Dempsey pointed out that future plans call for extending the Craftsmanship program into "soft-ware" departments, in addition to the hardware departments presently involved.

Former Lexington Shipmates Sought

Four Astronautics men are spearheading a move to locate former servicemen who once served on the USS Lexington (CV-2) in hopes they may want to take part in a reunion set for Chicago June 24-28.

Astro "alumni" of the famed carrier include L. A. Grissom, Grant Saeler, T. F. Hutchinson and George Theimer, the latter president of the Lexington Club. Theimer may be reached at ext. 2745, Plant 1, or at 281-4117 evenings.

R. G. Rosen Gets Personnel Post After Training

Richard G. Rosen, a recent graduate of GD/Astro's two-year industrial management training program, has joined the staff of M. V. Wisdom, director of industrial relations, as an industrial relations representative.

Rosen will be responsible for administration of the company's salaried, non-supervisory personnel policies, reviewing existing personnel policies, both internal and industry-wide, and preparing recommendations to GD/Astro management.

"In today's competitive industry," Rosen stated, "it is important to continually enhance the professional climate within our company." He encouraged salaried employees to present constructive ideas.

Rosen holds a BS degree from Roosevelt University, and a MBA degree from Graduate School of Business, University of Chicago.

Award Winner Will Be Named

A fifth name will be added to the list of President's Award winners at the March 19 meeting of GD/Astronautics Management Club, when President J. R. Dempsey honors the salaried employee with the top Cost Improvement Proposal record for 1963.

At the meeting at El Cortez Hotel, the winner will receive a plaque engraved with his name, an appropriate citation, and a $250 gift certificate. In addition, his name will be added to those on a perpetual plaque in the president's office.

Eligible for the President's Award are all GD/Astro salaried employees who have submitted cost saving ideas (CIPs) of $25,-000 or more during the year.

Previous President's Award winners were George C. Lange, O. H. Johnson, Frank B. Wahl and John L. Bigley.

GD/Astro Mgt. Club To Hear Executive

Reliability control department under Director P. I. Harr will sponsor the meeting of GD/Astro Management Club March 19 at El Cortez Hotel.

Speaker is Dr. George Odiorne of University of Illinois, prominent as an author and business executive, who will speak on "How Managers Make Things Happen."

GD/Astro's President's Award for 1963 will be presented.

Dinner is at 6:30 p.m., following a social hour. Tickets are available from Management Club "Boosters" throughout GD/Astro facilities.

TECHNICAL PAPER PROVES A 'SELLER'

Employees who have "put off" preparation of a technical paper may be motivated by the experience of GD/Astro's Jim Garrison, Dept. 662-9.

Garrison, on impulse, submitted an abstract last year to Society of Automotive Engineers. His paper, "The Heart and Soul of a Development Program," was chosen for presentation at SAE's Astronautics convention in Los Angeles, then picked up for use as the lead article in the November SAE Journal.

Since then, requests—some 140 of them—from corporations, individuals, management clubs, seeking reprints have poured in from all parts of the country.

Recently, Garrison's paper moved to the "international best-seller list" when he received a request from a Czechoslovakian engineering company—behind the "Iron Curtain."

General Dynamics NEWS

Published by General Dynamics Corporation, One Rockefeller Plaza, New York 20, N. Y.; with editorial headquarters at 3302 Pacific Highway, San Diego 12, Calif., P.O. Box 1950, telephone 296-6611, ext. 1071. Logan Jenkins, editor-in-chief.

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Affiliated editions of General Dynamics NEWS are published in Rochester, N. Y., covering GD/Electronics and Stromberg-Carlson, editorial offices, 100 Carlson Road, HUbbard 2-2200, ext. 2555. Fred E. Voss, editor: and at Groton, Conn., covering GD/Electric Boat, editorial offices at Groton, HIlltop 5-4321, ext. 300 and 513, Joseph Tracey, editor.

BRIEFINGS—General Dynamics Corporate Office teams were in field last month for briefings on division cost reduction programs. In top photo J. R. Dempsey, Astronautics president, second from right, outlines plans for, from left: E. D. Heller, Astro manager of cost reduction and value control, Erle Hill, Astro controller, Harold Wiseman, James Cowell Jr., Richard O'Sullivan, Corporate Office. Below, pictured at GD/Fort Worth are from left: James Sowers, Bluch Kahla, Corporate Office, C. W. Doyle Jr., GD/FW cost reduction coordinator, Robert Hanson, Corporate Office.

Four More 'Graduates' Finish Two-Year Training Program

Second group of "graduates" to complete an unusual Industrial Administration Training Program at General Dynamics/Astronautics received certificates and congratulations recently from President J. R. Dempsey.

They are R. B. Amick, W. L. Sittser, F. A. Tannehill and T. S. Wied.

Entering the program two years ago, this quartet spent from three to six months each in material, industrial relations, contracts and management systems departments. They performed actual department tasks, learning while contributing to the departmental output.

Astronautics established the program to develop the abilities of participants to handle higher level responsibilities in the future. It also provides a means of developing greater administrative and management depth and flexibility within Astro and General Dynamics.

Participants are selected from qualified candidates recommended by department heads, each meeting rigorous qualifications and each required to maintain outstanding levels of performance while in the program.

A systematic performance evaluation plan was set up especially for this program. Trainees are rated periodically by supervision with ratings later considered by a training evaluation board (made up of department directors) for final performance evaluation.

The program has been in action since 1961. Two groups have now graduated, with a third group, made up of outstanding college recruits, slated to finish in the fall of 1964.

Tannehill and Amick are now working in material department, Wied in contracts, with Sittser in the process assignment at present.

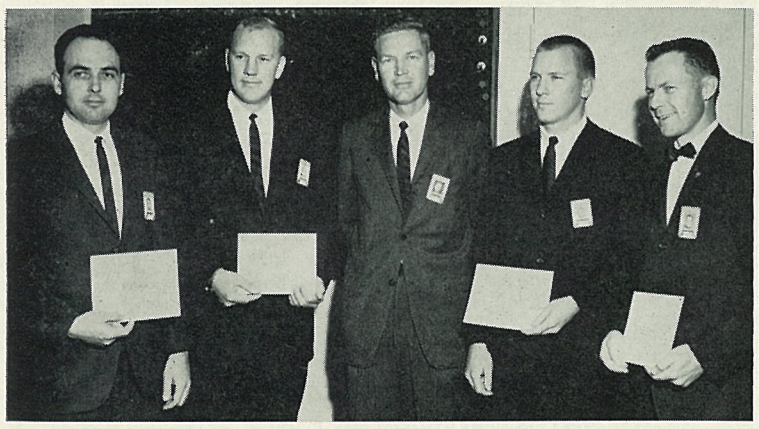
Business Women Hear GD/Astro's W. H. McGaw

W. H. McGaw, GD/Astro advertising and promotion administrator, spoke to San Diego business women members of the San Diego Chapter, American Business Women's Association, on importance of clear-cut communications.

Cecile Hoyle of GD/E, who introduced McGaw at last night's (March 10) meeting in her capacity as program chairman, said that the topic was chosen in line with the organization's goal of promoting better employer-employee relationship.

Meeting was held at Harold's Fifth Ave. Restaurant.

The group now is conducting its annual membership drive, said Mrs. Hoyle, who urges all interested GD women to contact her at ext. 461, Plant 1, for further information.



TWO YEARS OVER — Quartet of Astro men, shown with President J. R. Dempsey, center, recently completed two years in Industrial Administration Training program. Each worked extended periods in several departments. Showing certificates of completion they received are, from left, R. B. Amick, W. L. Sittser, T. S. Wied and F. A. Tannehill. Program draws top personnel for training to handle higher responsibilities in future.

Emergency Aid Helps Family With Sick Baby

"In everyone's life there comes a time when it is necessary to ask for help!

"This was indeed our hour of need and our call for help has been answered in many ways. We never dreamed when we applied for assistance that Emergency Aid Fund would be so generous, but you may be sure that our family will be eternally grateful."

These excerpts are from a letter typical of many received annually by the Emergency Aid Fund office of Astronautics Employees' Con-Trib-Club.

(Emergency Aid utilizes a portion of every Con-Trib-Club dollar to assist Astro employees and their families with emergencies beyond their normal means. Funds allocated are an outright gift with no repayment expected.)

Writers of the letter quoted are the parents of a daughter born shortly before Christmas. The child has required extensive medical attention and hospitalization. Emergency Aid was requested after family funds were exhausted. (Astro dependent's insurance does not cover a newborn child until it is 60 days old.)

In this case $500 was paid for hospitalization and another $235 for medical care. Not only did it clear these obligations for the parents, but it helped prepare them for the future when the child will require further treatment and possible surgery.

Perhaps these words of the parents are a "partial payment" to the many who make Con-Trib-Club possible:

"There were many days recently when it didn't seem that we had much to look forward to, but now that our darling baby seems out of danger, and some of the burden has been lifted, our future seems bright indeed!"

Two Earn Cash For Suggestions

Two GD/Astronautics employees profited recently from cost reduction ideas they submitted under the company's Employee Suggestion (ES) program.

They are R. L. Patrick, Dept. 715, and John H. Sowash, Dept. 756, who chose two different approaches to the cost reduction theme.

Patrick has received $207.80 for suggesting a material conservation idea which will save GD/Astro $2,078 in its first year of use. An idea to reduce effort and manpower has earned $153.50 for Sowash, whose suggestion indicates first-year savings of $1,536.

Sowash, an engineering test mechanic working in Bldg. 14 at the main plant, designed and built a portable pneumatic saw from scrap materials. This can be used, in Bldg. 14, on materials which were formerly cut by hand or transported to Bldg. 5 machine shop for cutting. His award is based on savings of nearly 500 manhours per year.

Patrick suggested a change in the size of material purchased, thereby eliminating a facing operation and wasted material.

Parts were being made from a one-inch thick stock, and finished to .75-inch thickness. Since final tolerances were not unduly critical, Patrick proposed use of stock purchased in .75-inch thickness.

Both GD/Astro's ES program for hourly employees, and the similar Cost Improvement Proposal (CIP) plan for salaried personnel are administered by division systems under J. M. Hanley, manager.

Save Materials—Don't Throw Your Job Away

GD/Astro Begins Construction On Space Systems Simulator

Construction is under way at GD/Astronautics on one of the most advanced space systems simulators in U. S. industry.

To be known as the Integrated Manned Space Systems Simulator, the facility involves a 58 by 90-foot addition to Bldg. 4 (main plant), adjacent to the existing life sciences wing.

Capable of "flying" any space mission foreseeable in the next decade, the simulator will be used for testing, research and development, and as an aid to space vehicle design.

Initial phase of the program will cost $800,000.

In its final form, the simulator's "space vehicle" will be able to duplicate earth-orbital flight, and missions involving both winged and ballistic vehicles during take-off, ascent, orbit, rendezvous, lunar and planetary flight, re-entry and landing.

"Astronauts" will fly a variety of missions, fed to the simulator by a computer system with which it will be linked. Closed circuit television will enable them to see their targets on a TV screen simulating a space vehicle window.

Models, special light projection globes, and huge roll maps will provide realistically simulated views of the earth, moon, star field, and a rendezvous target.

Astro Breaks Ground For Space Facility

Ground was broken late last month for the $6-million Combined Systems Test Stand (CSTS) to be built for National Aeronautics and Space Administration adjacent to GD/Astronautics main plant (GD/NEWS, Sept. 4, 1963).

CSTS is the first known facility designed specifically to accommodate all stages of a space vehicle for unified ground testing. It will be used for "rehearsals" of Centaur/Surveyor space flights to the moon.

Initial construction has begun under a $728,000 contract. Construction is supervised by GD/Astro, which will equip and operate the facility for NASA's Lewis Research Center, Cleveland, Ohio.

Ballroom Dancing Classes Resuming

Non-dancers as well as those interested in brushing up on their social dancing may be interested in a new series of ARA-sponsored ballroom sessions opening April 6.

Ludy Moeller, ARA commissioner, announces sessions will be held each Monday (7:30 to 9 p.m.) for a period of 12 weeks. They are the first offered since fall. ARA Clubhouse is the site.

Students pay $18 per couple for the full course, taught by professional instructors. Efforts are made to teach some of all the modern dance steps — cha cha, swing, fox trot, waltz and the various Latin steps.

Designed primarily as a "couples" activity, sessions are not closed to singles. However, no promise is made to supply partners. Singles are urged to pair up, if possible, before entering classes.

No advance registrations are necessary, just report at 7:30 p.m. April 6, Moeller says.

Beginner Lessons In Chess Proposed

Beginners' lessons are being considered by ARA Chess Club if sufficient interest is indicated by those calling Bud Fagan, ext. 3220, at the main plant.

The club meets regularly on Thursdays, 7:30 p.m., in ARA Clubhouse.

In a recent Escondido contest, Art Werbner and Stewart Daniels scored a draw and a win respectively in Astro's featured match, with other wins recorded by Jerry Daniels, son of H. D. Daniels, Dept. 142; Jerry Crane, Norm Lonsdale and Rod Crick.

Wives Club to Vote On New Officers

Election of officers will take top billing at a meeting of Astro Wives' Club March 18 at Islandia Restaurant, Mission Bay.

Social hour will open the session at 11:30 a.m., with luncheon at 12:30. All GD/Astro wives are invited. Helen Johnston, 277-2308, is accepting reservations.

GOLFERS WILL PLAY AT CARLTON OAKS

ARA Golf Club will hold its monthly sweepstakes at Carlton Oaks, March 21 and 22, with entries now being accepted at ARA Headquarters, ext. 1111.

In the February "best nine" contest, played at Rancho Bernardo, Ken Crotz shot a gross 74 to lead 0-11 handicappers, followed by L. M. Gibson and Don Cheek with 76s, and Harry Richards with 80.

Low net scorers in this class were Kay Stites (67), C. C. Pope (71), and Jim Jones and Dick Tobias with 72s.

In the 12-16 handicap flight, Dick Torrence and Fulton Smith tied for low gross with 80, and Ed Bourgeois fired 82; a net 67 was recorded by Russ Luker, while Ed Rylander had 68, and Lin Richardson and J. Bechard, 70s.

Gross honors in the 17-21 bracket went to Ron Reekers with 82, Sam Petcher (86), and Jim Busby (88), while 67s took top net honors for P. Mattson and Dick Marlowe, and Al Kelley, F. Boley and B. O. Coleman scored 69s.

A gross 74 captured honors for R. Hayes in the 22-and-up handicap class. He was trailed by Bob Hibbs with 90, R. L. Morgan, M. Murphy and C. Meinsen with 94s. Net winners here were G. Cooper (66), Ed McCleave (67) and Bob Clark (70).

Snow Club Taking April Reservations

Reservations for ARA Snow Ski Club's trip to Mammoth April 11 and 12 are being accepted by Tibor Lodi, ext. 1085, with advance bookings taken for a May outing.

A trip last month attracted 36 participants, and a similar group will head for snow country this weekend (March 14).

Club membership now stands at 142, and all interested employees are welcome to attend meetings the first Wednesday of each month, 7:30 p.m., ARA Clubhouse.

'Hole-in-One' Scored At Cottonwood CC

Arthur W. Smith of Astro quality control joined the select "Hole-in-One" Club when his 7-iron connected in a recent (Feb. 22) round on Cottonwood golf course.

Seven was a lucky number for Smith that day. He dropped his first ace in the cup on the 7th green.

The straight-soaring ball was mounted, for proof, by Jessop's Jewelry, and a certificate of "membership" from the course was handed the proud performer.

Identical Scores Win Keg Doubles

Two GD/Astro men were F Division doubles winners in the SD Bowling Association city tournament last month at Parkway Bowl. They are Robert E. Gregoire and Bill Obayashi, both in Centaur engineering (Dept. 988-3).

They teamed perfectly, both rolling 512 for a winning 1,024 total!

SNOWY WEEKEND — General Dynamics groups (200 strong) visited Big Bear during February. In addition to ice skating and tobogganing they tried slopes, such as at right where Dee Nunelly and Pearl Weickersheimmer are among novices. At left, Bud Davies, Barbara Gilliland and Bob Smith help feed crowd. Center: relaxing in lobby of Wawona Lodge.

WINTER SPORTS FANS TO WATCH HOCKEY

Big Bear is behind and Los Angeles ahead as ice skaters from all General Dynamics divisions in San Diego continue their winter season of activities.

Some 200 employees and members of their families trekked to Big Bear to one or both of two scheduled "winter weekend" festivities. (The second trip was hastily planned after the initial session was booked solid.)

The Feb. 7-9 and 21-23 trips found skaters enjoying all winter sports (skating, skiing, tobogganing, etc.), plus dancing, pizza parties. The entire Wawona Lodge was filled for each session.

On March 21 ice skaters plan to travel to Los Angeles to witness a Sport Arena match between the Los Angeles Blades and the San Francisco Seals professional ice hockey teams. Tickets selling for $3.50 regularly may now be reserved through March 13 at employee services for $3.25 for the game. No group travel plans are anticipated, although tickets will seat San Diego visitors in the same area of the arena. This is the third and final ice hockey trip planned.

Regular ice skating sessions are held each Thursday night (6:30) at the Mission Valley Ice Arena. All skaters are welcome.

Withholding Chopped Beginning in March

Payroll checks going to General Dynamics people at Astronautics, Convair, and Electronics divisions during current pay periods are reflecting the reduced withholding tax deductions, just approved by Congress.

Hourly employees received the increased take-home pay last Friday (March 6). Flat-salaried employees will notice the difference to the good on their March 13 checks.

Seventy Attend Value Gathering Held By SAVE

Some 70 delegates from San Diego industries heard discussions of the various facets of value engineering by General Dynamics experts at a special one-day Value Engineering Seminar sponsored Feb. 26 by San Diego Chapter of Society of American Value Engineers.

A. S. Freedman of GD/Electronics - SD, president of the local chapter, welcomed the group following introduction of the program by L. R. Swenson, NAS, North Island. F. H. King, with the AF Plant Representative's office at Astronautics, made the first formal talk on "Requirements for Value Engineering."

"Value Engineering in Perspective" was discussed by luncheon speaker, Capt. J. R. Middleton, USN, BUWEPS Fleet Readiness Representative, Pacific.

All other talks were by GD men from Astronautics, Convair, GD/E.

E. D. Heller, Astro manager of cost reduction and value control, spoke on "V.E. Functional Techniques." Other Astro speakers were E. A. Lindem, "V. E. Job Plan," and "Creative Thinking," and L. G. Curtis, "Challenge Requirements."

Convair was represented by H. P. Williams, manager of value control and cost reduction, who acted as program chairman and conducted the workshop session; H. G. Rote, "Use Standards"; S. W. Swenson, "Use Your Own Judgment"; W. G. Martin, "How to Report."

"Roadblocks—Habits and Attitudes" was topic of M. M. Reeder, GD/E value control coordinator. D. L. Macey, also GD/E, spoke on "Use of Specialty Suppliers."

VALUE DISCUSSION — Meeting for exchange of value control reports and progress at four General Dynamics divisions are, from left, M. M. Reeder, GD/Electronics-SD; H. P. Williams, GD/Convair; Harlon Filloon, GD/Pomona; E. D. Heller, GD/Astronautics.

Round-Table Discussion Held On Cost Reduction Guidelines

Value control administrators at four General Dynamics divisions met last week in San Diego to discuss procedures and organization of their cost reduction programs, and how they best could comply with guidelines recently released through the Assistant Secretary of Defense.

E. D. Heller of GD/Astronautics; H. P. Williams, GD/Convair; M. M. Reeder, GD/Electronics - San Diego; and Harlon Filloon of GD/Pomona, all responsible for value control and cost reduction efforts at their respective divisions, were present at the round-table discussion March 3.

Under consideration were such points as definition of value terms used in GD divisions as related to those employed in government documents; individual cost reduction programs; criteria for establishing cost reduction targets; ground rules for reporting savings.

PAPERS WELCOMED FOR UAIDE MEET

A call is out for papers to be presented at the 1964 annual UAIDE (Users of Automatic Information Display Equipment) in Los Angeles this summer, Aug. 12-14.

The UAIDE annual meeting presents the latest advancements in digital display applications and techniques developed for use on the S-C 4020 High Speed Computer Recorder or related equipment. Papers are welcomed in areas of system organization, display hardware, applications and programming.

Three copies of a one-paragraph abstract should be submitted as soon as possible, no later than June 1, to M. Hoffman, program chairman, Dept. 716-61, Atomics International, P.O. Box 309, Canoga Park, Calif.

Current president of UAIDE is H. E. Pietsch of GD/Astronautics.

New Bus Schedules Will Go Into Effect

Bus service between GD/Astro facilities in the San Diego area was reduced by half, effective Monday (March 9), with new schedules now affecting transportation between the main plant, Plant 19, and GD/Convair Plant 1.

Bus runs now originate on the hour, 7 a.m. to 4 p.m., at the main plant; depart Plant 19, 20 minutes after each hour for Plant 1 (8:20, 9:20, etc.); leave Plant 1 for return to Plant 19 on the half-hour; and make the return trip from Plant 19 to the main plant, 35 minutes after the hour (7:35, 8:35, etc.).

Bus service for second shift has been cancelled. Employees requiring transportation after 5 p.m. must contact the dispatcher, ext. 1515, or report in person to transportation office, Bldg. 6, main plant.

Starr of GD/Astro Is Lone GD Winner

Sterling Starr, veteran GD/Astro sailplane pilot, was the only General Dynamics contestant to reach the winners' circle in the 18th annual Midwinter Soaring Championships at Torrey Pines glider port, Feb. 29-March 1.

Starr placed second in overall competition and took the distance trophy for his near 50-mile flight to Cuyamaca with top altitude of nearly 4,700 feet. His altitude record gave him second in that classification.

Meet champion was Ray Proeneke of Gardena, who won the Convair trophy for altitude, and the John J. Montgomery trophy for overall points in bomb drop, altitude, distance, spot landing, and endurance events.

SALVAGE YARD SCHEDULE SET

GD/Convair salvage yard schedule for employee sales this month is March 14 and 28. All GD people are admitted to the Saturday morning sales by identification cards. Hours are from 8 a.m. until noon. Next sales day at the GD/Astro main plant yard is April 4.

Bargain Travel Programs For GD Folk Slated

General Dynamics recreation groups in San Diego, ARA and CRA, have announced a full-scale foreign travel program for 1964 open to all employees and their families.

The program extends throughout the summer months and is made possible through affiliation with the San Diego Industrial Recreation Council. Plans call for travel meetings to be held prior to each scheduled trip, although preliminary information is available through CRA, ext. 1245 at Plant 1, or ARA, ext. 1111, Plant 71.

Leading off will be an 11-day Alaska adventure cruise via the inland passage from Canada, touching at Vancouver, Victoria, Prince Rupert, Ketchikan, Juneau, Skagway and Wrangell. Travel is via air to Vancouver and thence via boat (the SS Prince George). The package, which includes many meals and extras, is available from $399 per person.

There will be three different six-day air trips to the New York World's Fair, departing May 31, July 26 and Aug. 23. Many extras are included in the package deal costing $199 per person. There is also a round-trip air ONLY version on the same departure dates for $145 per person.

On June 15 a 15-day visit to Mexico (seven cities in the tour) is slated. Travel is via jet, prop jet and motor-driven aircraft with stops at Mazatlan, Puerto Vallarta, Guadalajara, Taxco, Acapulco, Cuernavaca and Mexico City. The cost is $295 per person.

A 10-day trip to Hawaii departs July 24 and includes visits to Hawaii, Maui, Molokai and Oahu, plus many package extras. The package is $295 per person.

On Aug. 23 a 16-day jet tour to Hawaii is slated with the package set at $395 per person. It also includes many extras.

Most packages include all accommodations, plus a variety of extras.

Merit Exams Set For Sat.

This Saturday (March 14) is the ONLY opportunity for employees' sons and daughters planning to enter college in 1965 to take the qualifying examination for General Dynamics Merit Scholarships.

San Diego area students in their junior year of high school must arrange now to take the National Merit Scholarship Qualifying Test (NMSQT) by contacting their high school principal's office.

Failure to take the NMSQT on March 14 will bar students from any further hope of qualifying for the General Dynamics Merit Scholarships.

General Dynamics Merit Scholarships are stipends awarded to qualifying sons or daughters of employees on the basis of scholastic achievement. Amount of the award is based on student need.

Three Package Tours Offered

Escorted tours to Jai Alai games in Tijuana, offering three choices of entertainment, have been arranged especially for General Dynamics people the nights of March 27 and 28.

The introductory offer, which allows local people to view the exciting sport with full explanation by experts, has been arranged at reduced prices through coordination of James Hardison, GD/Convair, with Fronton Palace officials.

All three choices include the basic deal ($3.50 a person) of round-trip transportation, Jai Alai admission, one drink, introduction to players.

Second offer at $5.50 each includes, in addition, a regular $3.75 steak or lobster dinner.

Third choice, $7.50, extends the tour to a sightseeing drive, drink at the Foreign Club, admission to the Follies Bergere. Each package price is $2 off regular charge.

All tours leave the SD Zoo parking lot at 5:45 p.m. Friday and Saturday nights and return at 1 a.m.

Reservations must be made by March 20 through CRA office, ext. 1245, Plant 1; ARA, ext. 1111, Astro main plant; or Hardison at his home phone, 276-5805.

'Rifleers' Sponsoring Firearms Program

A "recruiting" meeting for General Dynamics parents and their youngsters who are interested in learning proper use of firearms, will be held by Astro Rifleers (junior rifle club) at 7:30 p.m. today (March 11) in ARA Clubhouse.

Rifleers membership is open to GD/Convair, GD/Astro and GD/E sons or daughters to 18 years of age. Activities include safety and marksmanship instruction competition, and participation in other National Rifle Association functions. Members may purchase ammunition at cost, and have free use of rifles.

Movies "Trigger Happy Harry" and "Shooting Safety" will be shown at the meeting, and NRA literature and information will be distributed.

Both potential Rifleer members and their parents are welcome.

Photographer Wins Honors on Contest

Howard Harvey, Convair lensman, copped two awards in black and white competition, while Aaron Wolgin and Jim Mildice won color honors for advanced photographers and Lee Reese, D. E. Cable and Jay Hudson led beginners in February competition staged by the joint ARA-CRA camera clubs.

On tap for 7:30 p.m. Sunday (March 15) at the Photo Arts Bldg., Balboa Park, is a model shoot open to all cameramen. Two Astro girls, Kay Hendrix (Dept. 521-6) and Connie Varonfakis (Dept. 987-3) will serve as models.

Tool, Mfg. Engineers Elect Astro Trio

Three GD/Astro men will be installed as officers of San Diego chapter, American Society of Tool and Manufacturing Engineers (ASTME) during a meeting at 7 p.m., March 20, Atlas Room, Town and Country Hotel.

To be installed by Ray Gariss, ASTME west coast national director, are C. E. Roye, Dept. 403-3, chairman; G. A. Grossaint, manager of production engineering, third vice president; and Robert DuPort, Dept. 425-3, treasurer.

Old China Dancers Appearing at Russ

General Dynamics folks have an opportunity to see one of the initial U.S. performances of the Sahm-Chun-Li Dancers and Musicians tomorrow (March 12), 8:30 p.m., in Russ Auditorium.

ASTRO LOVELIES — This was entire field in annual "Miss or Mrs. ARA" contest now in progress. From this group 18 were selected to model during March 18 fashion show.

Sports & Recreation

Eighteen in Finals Of Queen Contest

Eighteen finalists have been selected in the annual "Miss or Mrs. ARA" contest with final judging slated for next week (March 18) during a spring style show set for Bldg. 2.

This show, "Fashion Satellite," will feature creations supplied by Ballard and Brockett. Models will be the 18 finalists. Judges will select, during the show, a queen and four members of her court.

Tickets for the show, at $1 each, are now available through employee services.

The finalists, with department numbers in parentheses, are: Eileen Blalock (193-2), Dianne Carpinelli (672-1), Peggie Emerson (200-0), Jan Grier (124-0), Pat Hardisty (130-7), Darlene Jones (194-0), Beverley Larson (500-0), Sandra Lizman (191-0), Mary Kay Neilsen (191-0), Toby-ann Purcznski (130-6), Joan Rampton (191-0), LaVerne Romero (195-0), Glendine Ross (336-5), Geraldine Smith (191-1), Gwen Stivers (a wife of Dept. 953-3 employee), Mavis Thiel (035-0), Freddy Sue Whitfield (130-6), and Cheryl Ann Worster (371-3).

Final Call Sounded for Entries In Annual Keg Tournament

Final call was sounded this week for keglers, men and women, experienced and beginners, to enter ARA's sixth annual plant-wide bowling championship to be held April 4-5 and 11-12 at Clairemont Bowl.

Deadline for entering is midnight Sunday (March 15).

This annual event, the lone ARA-sponsored tournament, leads to the crowning of Astronautics champions in men's and mixed team events, men's and women's singles and all-events and men's and mixed doubles events.

Because of handicaps applied, all keglers have an equal opportunity to win. And ARA provides at least one award for every 10 bowlers. In addition, the prize fund is returned 100 per cent. Book averages for 1962-63 will prevail.

Entry forms are now available through employee services.

Entry fee is $3 per event, except all-events which is optional at $1.

Team events lead off at 3 and 6:30 p.m. April 4 and at 12 and 3 p.m. April 5. Singles and doubles follow at 1, 3:30 and 6 p.m. April 11 and again at 12:30 and 3 p.m. April 12. Those entering singles events must bowl doubles and vice versa.

Bill McHorney, ext. 1111, is tournament director.

ARA Calendar

(GD/Astronautics Recreation Association has some 40 activities in operation for employees. For information call ARA Headquarters, ext. 1111.)

★ ★ ★

AMATEUR RADIO — Meets today (March 11), 7:30 p.m., ARA Clubhouse. Business includes selection of Field Day site, club constitution.

ARCHERY — Meeting 7:30 p.m., March 19, ARA Clubhouse.

ASTRO LENS — Model shoot, 7:30 p.m., March 15, Photo Arts Bldg., Balboa Park.

ASTRO TRAVELERS — Trailer and campster outing, March 21, 22, Lower Otay Camp Grounds. Contact Fred Schofield, president, Plant 19, ext. 717.

BOWLING—Entries for championship tourney, Clairemont Bowl, April 4, 5, 11, 12, now available at employee services outlets.

BRIDGE — Play nights Fridays, 7:30 p.m., ARA Clubhouse.

FIFE & DRUM — Meets Wednesdays, 7:30 p.m., ARA picnic pavilion. Info: Jim Churchyard, main plant ext. 4513; Ed Hartdorn, Plant 19, ext. 1329.

GOLF — Sweepstakes, Carlton Oaks, March 21, 22. Enter at ARA Headquarters, ext. 1111.

ORGAN — Club meets 7:30 p.m., March 17, ARA Clubhouse.

SQUARE DANCE — March 17 is final open night for beginners' class, meeting each Tuesday, 8 to 10 p.m., ARA Clubhouse.

TEEN CLUB — Dance, 7:30 to 11 p.m., March 21, ARA Clubhouse. Band, "The Centurys." Dress, school clothes. One guest per member. Admission 50 cents per person.

TOASTMISTRESS — Serra Mesa Club meets 7:30 p.m., March 16, ARA Clubhouse. Educational program. Guests welcome.

WATER SKI — Meets 7:30 p.m., March 31, ARA Clubhouse.

WIVES CLUB — Luncheon meeting March 18, Islandia. Social hour, 11:30 a.m., luncheon, 12:30. Election of officers.

Schindler Repeats In Pistol Matches

Al Schindler won both matches at an ARA Pistol Club shoot Feb. 23 at San Diego Police Pistol Range.

In a .22 Police Course, Schindler led in master class with 293 of a possible 300 points, trailed by Roland Schneider and ARA Commissioner Bill Geopfarth, both with 290 (11 and 5 Xs respectively).

In expert class, Bill Dittmann was in front with 287, while Angrim Carlson scored 275; Bill Worthington led Byron Clapper, 261-253 in the sharpshooter bracket; and J. T. Crane fired 195 for marksman honors.

Schindler's 281 won the Center Fire Short National round, with Warren Ranscht's 278 in second place. Geopfarth fired 264, and Schneider, 263.

Research Seminar To Draw Military

R. D. Tuttle, GD/Astro Dept. 316-0, is general chairman for a major research seminar to be conducted in San Diego later this year.

The event is sponsored by Naval Research Reserve Company 11-5 with Office of Naval Research sanction. It is expected to attract more than 100 key representatives of Navy, Army and Air Force research organizations, Department of Defense and NASA.

General Dynamics men participating in the sponsoring unit include Tuttle, Robert Bradshaw, Phillip Syr, A. E. Hunt, A. H. Owens and Victor Zirkuly of GD/Astro, N. L. Wener of GD/Convair, and Charles B. Wagner of General Atomic.

200th Atlas Launch Covers Available

Astro Stamp Club has available a limited supply of commemorative covers marking the 200th launch of an Atlas vehicle appropriately postmarked at Cape Kennedy, Jan. 30, 1964. They sell for 25 cents each.

Stamp Club members gather on the second Thursday of each month for an auction and the fourth Thursday for a trading session at ARA Clubhouse at 7:30 p.m. Call Alfred M. Lawson, club president, ext. 1251, Plant 19, for details.

Annual Controller Dance To Be Mar. 14

Sure now, an' there'll be a "Wearin' o' the Green" Saturday (March 14) when Astro lads and lassies gather at the Caribbean Room, El Cortez Hotel, for the annual Controller's Dance.

Semi-formal, the affair will feature the music of Bart Hazlett (8:30 to 1), refreshments, door prizes and special surprises. Tickets are $1.50 per person and available throughout controller functions.

Youngsters to Hunt Easter Eggs Mar. 28

GD/Astro youngsters, 12 and under, have received a special invitation to take part in this year's edition of ARA's annual Easter Egg Hunt, scheduled for 2 p.m., March 28, in the Recreation Area.

The traditional affair is free to children of GD/Astro employees, and will feature games and prizes, in addition to the egg hunt.

This year's event is organized by a committee comprised of ARA President Ezra Johnson, Bill McHorney, Mrs. Martha Buchan, John Hess and Gil Hutter.

Bridge Fans Eye Coming Tourney

ARA Bridge Club will concentrate on the NIRA "Par" Bridge Tourney at its March 20 meeting, 7:30 p.m. in ARA Clubhouse. Participants will vie for master points and trophies.

Tournament registration and additional information will be supplied to those contacting Art Saastad, ext. 1111 or 233-0808, Bill Hatherley, ext. 1684, Bob Rustad, ext. 4285, or Gene Alford, ext. 4161, by March 18.

During the run of Astro Players' spring production, Bridge Club will hold its weekly sessions in the main plant executive dining room. Affected dates are March 27, April 3 and 10.

In club play Feb. 21, Section "A" winners were Margaret Grindstaff and John Donan, N-S, Mr. and Mrs. Wells Ashley, E-W; Section "B," Mitzi Rustad and Doris Hanratty, N-S, Mr. and Mrs. C. A. Miller, E-W.

Section "A" winners on Feb. 28 were D. K. Stites and B. Montgomery, N-S, Francys Darr and Frederica Combs, E-W; Section "B", Marvin French and C. A. Miller, N-S, Bob Rustad and Elma Buchanan, E-W.

Tickets Go on Sale For 'Curious Savage'

"The Curious Savage," Astro Players' spring production, is in final stages of rehearsal prior to opening later this month for a nine-night run.

ARA drama group will stage the show in ARA Clubhouse, 8 p.m., March 26, 27, 28, April 1, 2, 3, 8, 10 and 11.

Lillie Mae Barr will take the featured role.

Tickets are now available through employee services outlets for $1 (general admission) and $1.50 (reserved section).

Rockhounds to Visit Gem Show at Boron

ARA Rockhounds field trip March 21 and 22 will take club members to the "Rock Bonanza" gem show sponsored by Mohave Mineralogical Society in the Homeland Park Community Bldg., Boron.

Besides visiting the show, the group will make side trips to excellent collecting areas in the vicinity, where camping facilities are available.

Guests are welcome, and for further information may contact ARA Commissioner Fred Baugh, ext. 3580, or President Gerald Halterman, ext. 4283.

Tennis Round Robin Draws Field of 40

Some 40 participants turned out for ARA Tennis Club's singles round robin tournament held over three weekends during February on ARA courts.

Terry Chaturn, Dept. 966-4, was Division "A" winner over Charlie Felker, Dept. 124-0, and Don McClarren, Dept. 377-8, topped Carl Shuler, Dept. 523-7, in Division "B."

In Division "C" young Dick Bennett showed his dad a "thing or two," and finished in first place. The senior Bennett (Ed, Dept. 364-0) finished third; and Jan Andrews, Dept. 966-5, second.

Sq. Dance Rolls Close Tuesday

Last opportunity for beginning square dancers to enroll in ARA's spring instruction series will occur at 8 p.m., Tuesday (March 17), the third and final "open" night for the class now forming.

Twice each year—spring and fall—Astro Nauts, ARA square dance club, start a new beginners' class.

After a series of weekly lessons (8 to 10 p.m., Tuesdays, ARA Clubhouse), those entering the new class will emerge next fall as full-fledged members of the advanced dance group.

Instruction is provided by Dot and Van Vander Walker, who lead beginners from simple walk-throughs to the more intricate steps of the dance as the class progresses.

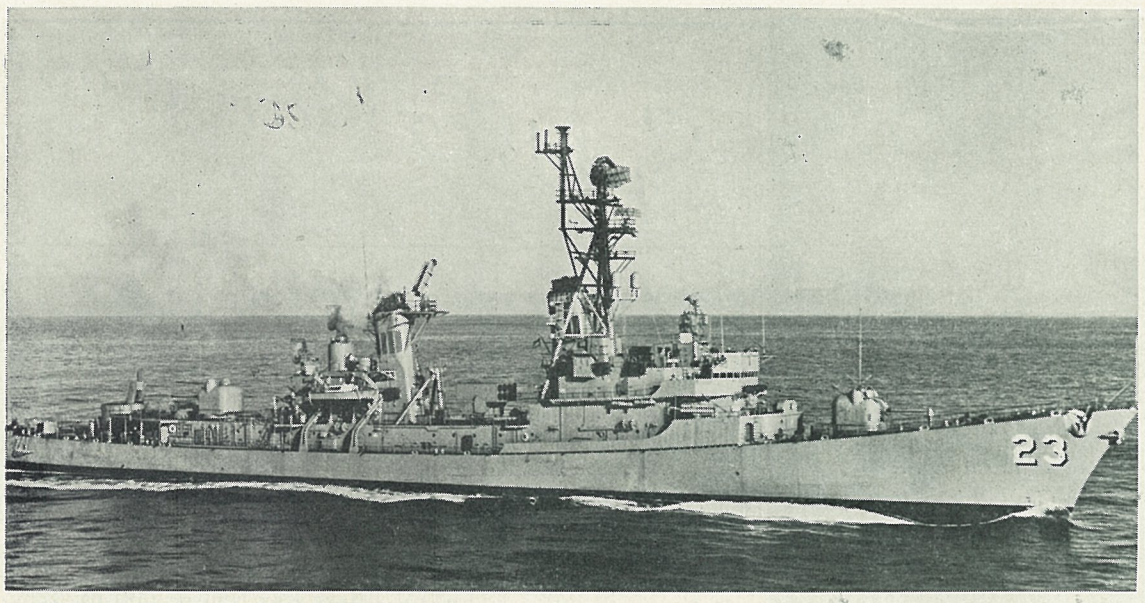
No advance registration is required. Dancers need only report to the clubhouse on Tuesday evening. The nominal instruction fee is paid by the week. Although this is primarily a "couples" program, singles will be accepted in equal numbers.

Water Skier Club Will Open Season

Astro Water Ski Club will open its 1964 season with a meeting at 7:30 p.m., March 31 in ARA Clubhouse.

Classes for skiers — beginning through advanced, including trick and slalom skiing and jumping — will be formed, and the club activity schedule for picnics, trophy meets and trips will be discussed.

Prospective members are urged to attend, and may obtain more information by calling Stan Stein, ext. 1901, or Elaine Carter, 488-9014.



JOINS FLEET — USS Richard E. Byrd (DDG-23) joined fleet following commissioning ceremonies at Puget Sound Naval Shipyard recently. The 4,500-ton ship, named for famed polar explorer, is armed with GD/Pomona-built Tartar surface-to-air missiles.

GD/E-SD Briefs ASW Admiral On New Radars

Rear Admiral C. A. Karaberis, USN, Commander, Anti-Submarine Warfare Group One, and members of his staff were briefed on General Dynamics/Electronics-San Diego programs on a visit Feb. 18 when they flew into the San Diego facility from their USS Kearsarge headquarters.

Included in the briefings, which included one on a GD/Convair project, were radar developments especially applicable to anti-submarine warfare, explained John N. MacInnes, GD/E requirements engineer-Navy, who coordinated the visit.

The Naval officers heard presentations on GD/E's Aircraft Station Keeper Radar by J. B. Gehman, engineering staff specialist; Terrain Following Radar by R. F. Schillinger, project engineer; A-NEW project by J. H. Redman, manager of military requirements-data products; Short Pulse Radar, R. R. Apgar, project engineer.

R. H. Oversmith, chief ASW-marine sciences, made the Convair presentation.

In addition, the group saw a laboratory demonstration of GD/E products, including the new Hand-Held Radar by R. W. Jackman.

Accompanying Rear Admiral Karaberis were Capt. L. R. Yarnell, Cdr. L. F. Bogan, Cdr. H. L. Milhan, staff operations officers, and Lt. B. J. Adams, flag lieutenant. Rear Admiral Karaberis is due to be transferred soon to Washington, D. C., where he will be head of Aviation Plans Division in the Office of Chief of Naval Operations.

GD/E DEMONSTRATION — RAdm. C. A. Karaberis is shown newly-developed GD/Electronics-SD radar by R. R. Apgar during recent visit to San Diego division.

'POGO' TO APPEAR ON CBS TELECAST

"Twentieth Century" telecast by CBS on Sunday, March 22, will include shots of the GD/Convair XFY-1 Pogo as the development of vertical takeoff and landing aircraft is traced in the episode titled "Upjet."

Tartar-Armed Ship Selected For Multi-Nation Experiment

Tartar-armed USS Biddle (DDG-5) was assigned last month by Secretary of Defense Robert S. McNamara to a unique multi-national experiment to which six other NATO countries will contribute crewmen.

President Johnson approved the guided-missile destroyer experiment scheduled to start within six months.

In addition to GD/Pomona-built Tartar surface-to-air guided missiles, Biddle is armed with the anti-submarine rocket Asroc.

The United States will furnish 50 per cent of the crew for the 18-month test of mixed manning of a warship — forerunner of a possible NATO force of Polaris missile launching surface ships.

Also providing officers and men for the 334-man crew will be West Germany, Britain, Greece, Italy, Netherlands and Turkey. None will be allowed more than 20 per cent.

The ship, under U. S. command, will serve with Second Fleet in the Atlantic and Sixth Fleet in the Mediterranean.

Commissioned at Philadelphia Naval Base on May 5, 1962, Biddle has an overall length of 437 feet, a beam of 47 feet and a displacement of 4,500 tons. The ship is equipped with the most modern communications and electronics installations and is capable of detecting, tracking and delivering rapid salvos of missiles and projectiles against enemy targets in the air, on the sea, under the sea, or on land.

I. B. Hale Panelist At Police Meeting

I. B. Hale, FW manager of industrial security, served as a workshop panelist at the 70th Annual Conference, International Association of Chiefs of Police, in Houston recently.

Hale's presentation, "Cooperative Efforts of Police and Industrial Security Officers," was published in the January issue of "Industrial Security," official publication of the American Society for Industrial Security.

GD COORDINATOR PRESENTS PAPER

D. L. Platt, GD/Astro program PERT coordinator, presented a special paper last week (March 5) before the National SHARE meeting staged in San Francisco. His paper was "Organization Implications of Resources Allocation—as It Relates to the PERT/Cost Management System."

Radio Hams Link Father, Daughter

ARA Amateur Radio Club equipment served as link between a GD/Astro father and his Peace Corps daughter half a world away, last month.

Using the club station (W6-UUS) in ARA Clubhouse, ARA Commissioner Ed Carson (W6-VNM) and Jay Ereneta (W6-VOM) established radio contact with Ereneta's daughter, Roselyn, a former GD/Astro employee now serving with the Peace Corps on Cebu, Philippine Islands.

Contact with Roselyn was made through a Filipino "ham" operator (DU7SV) in Cebu City. Both Carson and Ereneta are in GD/Astro Dept. 780.

Distinguished Executives Join Board

(Continued from Page 1)

Co. of Canada, Ltd., Pullman Co. and Mead Johnson & Co. Since 1949, he has served as a trustee of Hamilton College, from which he received an A. B. degree in 1921.

* * *

Packard is president of Hewlett-Packard Co. of which he was a co-founder in 1938.

Born in Pueblo, Colo., in 1912, he attended Stanford University, receiving an A. B. degree in 1934 and a degree in Electrical Engineering in 1939. After completing an advanced course in engineering at Colorado University in 1936, he worked for General Electric Co. in Schenectady, N. Y., for two years before starting his own company.

Packard is also a director of the Pacific Gas and Electric Co., Crocker-Anglo National Bank, Stanford Research Institute and the Committee for Economic Development. He is a member of the Business Council and the board of trustees of Stanford University, having served as chairman of the board from 1958 to 1960.

The author of several articles as well as the holder of several patents in the field of electronics and measurements, Packard is a member of the American Institute of Electrical Engineers and a fellow of the Institute of Radio Engineers.

Convair Engineers To Present Papers

Four papers, based on recent oceanographic studies at GD/Convair, will be presented by Convair engineers at the International Buoy Technology Symposium sponsored by the Marine Technology Society in Washington, D. C., March 24-25.

Robert Devereux and K. A. Morgan will join in giving their paper on "Recent Experiments in Ionospheric Radio Telemetry."

S. T. Uyeda's paper is titled, "Buoy Configuration Resulting from Model and Computer Studies." F. M. Garth will present "An Initial Look at Oceanographic Buoy System Requirements"; W. R. Hoover, "Evaluation of an Electric Power Source for Oceanographic Buoys."

Orbiting Observatory 'Big' Project at Astro

The "big" project at GD/Astronautics' Point Loma Test Site at San Diego these days is OAO the Atlas-launched Orbiting Astronomical Observatory under development for National Aeronautics and Space Administration.

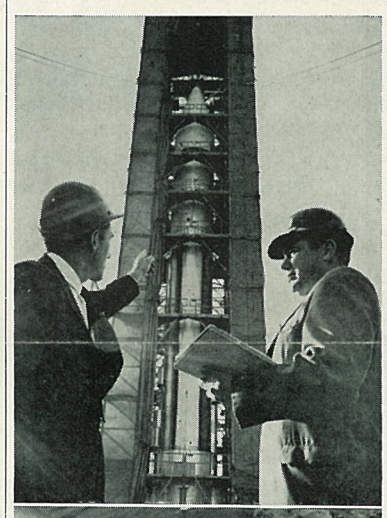
And big it is!

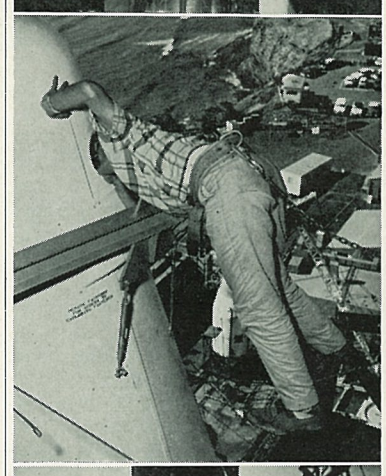
A complete "stack"—Atlas, Agena B and payload with fairings and nose cone—fills Point Loma's recently-heightened static testing "A" Tower with little room to spare.

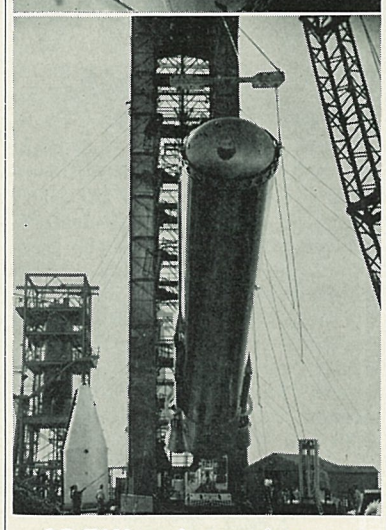
Looking at the stack from bottom up, there is Atlas in a constant 10-foot diameter (no nose taper) configuration like that used for Centaur. Next comes an adapter to accept the Lockheed-built Agena B second stage, both concealed in fairings; and atop this, the OAO payload (built by Grumman) enclosed in a three-story fiber glass nose from GD/Fort Worth.

At Point Loma for a series of tests under direction of Fred Wallace of GD/Astro's systems test labs (Dept. 565-1), OAO units are installed in both "A" Tower and nearby "C" Tower, where work is coordinated by Group Engineers H. W. Wegener and R. C. Hinck, respectively.

J. H. Derango is lead engineer at "A" Tower, assisted by J. D. Jones, R. H. Read and P. C. Adams. One test phase in this facility is complete and a second series is about to begin.







SO TALL — In top photo, completed "stack" of Atlas, adapters and Agena, plus OAO mockup inside nose cone, is viewed between Dick Read, left, GD/Astro engineer, and Jack Miller, Dept. 756, "A" Tower assistant foreman. Center: Engineer Phil Adams peers through inspection port of OAO nose cone atop tower at Point Loma Test Site. Below: Special Atlas is suspended by cranes during erection at test site.

The first tests were a "match-mate" series, designed to verify compatability of components supplied by GD/Astro, Lockheed and Grumman. For this purpose, a payload mockup with nose cone, "dummy" Agena with enclosing fairings, and the interstage adapter were installed together in "A" Tower.

The test phase was completed with little difficulty and these units were removed. Then Atlas —the actual vehicle to be used for launch—was swung cautiously into place, and the "stack" was rebuilt with the original units hoisted atop the booster.

This array will be used in a second phase of "A" Tower testing which will begin shortly.

For this series (free-free vibration tests), Atlas' outboard (booster) engines have been removed and replaced by units which now rest on two specially developed devices.

During testing these devices will actually "float" the bird (with its LOX and fuel tanks filled with de-ionized water to duplicate tanked weight). Pneumatic units attached to damping weights at three points on the booster and payload will induce vibrations at various frequencies for "shake testing" under direction of components test lab (Dept. 564-1).

Test data on the vehicles' performance will be relayed via accelerometers strategically mounted throughout the stack.

Perhaps most dramatic of the "A" Tower tasks was erection of the Atlas. Both a 45-ton crane with 110-foot boom and a 20-ton crane were used to swing the launch vehicle into place.

It was a tight fit. Once swung up vertically on the big crane, Atlas was rotated to squeeze its thrust section into the tower. Even then, there was less than two-inch clearance on each side!

Other units of the stack were pulled up by the stand's five-ton hoist.

Meanwhile, engineers W. C. Fogg, C. L. Holmes, A. B. Carlson and Carl Conaway had been preparing for other tests in "C" Tower. A series here will involve studies of stress.

Test articles for these tests are an Atlas stub tank mounted on a two-inch thick steel plate (**General Dynamics NEWS**, Aug. 21, 1963), with an Agena and OAO mockup positioned atop it. A cable and hydraulic ram system will be used to apply forces equal to those expected during flight.

Instrumentation work for all Point Loma was handled by GD/Astro electrical systems test labs, and personnel under Frank M. Urban, assistant test lab group engineer, with Richard N. Franklin, lead engineer.

At "A" Tower were instrumentation engineers C. W. Gardner, D. R. Kelley and F. F. Koehl, with R. L. Ellis and E. G. Denson working at "C" Tower.

All Point Loma operations fall under cognizance of Site Manager Carl Rother.

To carry out their tests, the engineers rely on GD/Astro's engineering test support (Dept. 756) with C. W. Graser, assistant general foreman, in charge at Point Loma. J. H. Miller and L. H. Green are assistant foremen at "A" and "C" Towers respectively.

The OAO test program swung into action early last year when both "A" and "C" Towers were heightened to accommodate the OAO stack.

The 3,600-pound OAO payload is designed to make telescopic observations in the ultra-violet, and X-ray range, from a precisely orbiting platform above the obscuring effects of the earth's atmosphere.

It will be launched from Cape Kennedy's busy Complex 12, which is launch site for the Ranger series, and will also be used for NASA Mariner Mars fly-by missions, and for OGO (Orbiting Geophysical Observatory) satellite launches.

Payroll Purchase of Savings Bonds Strongly Endorsed

General Dynamics Corporation strongly endorses the following sentiments, expressed by Secretary of the Treasury Douglas Dillon and co-signed by national leaders:

"We . . . believe:

"That the strength and continued prosperity of the United States and of our cherished free enterprise system depend upon the degree of interest and participation of all our citizens, both corporate and individual, in the maintenance of our institutions and in the efforts to achieve an effective solution of our national problems;

"That the widespread public ownership of the national debt through purchases of United States Savings Bonds is essential to the sound management of our government's finances and to the stability of our currency;

"That systematic Payroll Savings in United States Savings Bonds has proved to be a most convenient and highly effective way in which the individual employee can invest not only in a better future for himself and his family but also in the future welfare and defense of his country;

"That this voluntary exercise of thrift helps secure the individual—as well as commerce, industry, and the nation—against adversity, and earns the participant a greater share in the abundance of America;

"Therefore we, who are among the stewards of free American enterprise, urge all employers and employees to join with us in cooperating with the government for our mutual good by providing leadership for the purchase of United States Savings Bonds through the systematic Payroll Savings Plan, promoting thereby the opportunity for all to enjoy a larger share in a greater tomorrow."

Roger Lewis
President, General Dynamics Corporation

GENERAL DYNAMICS

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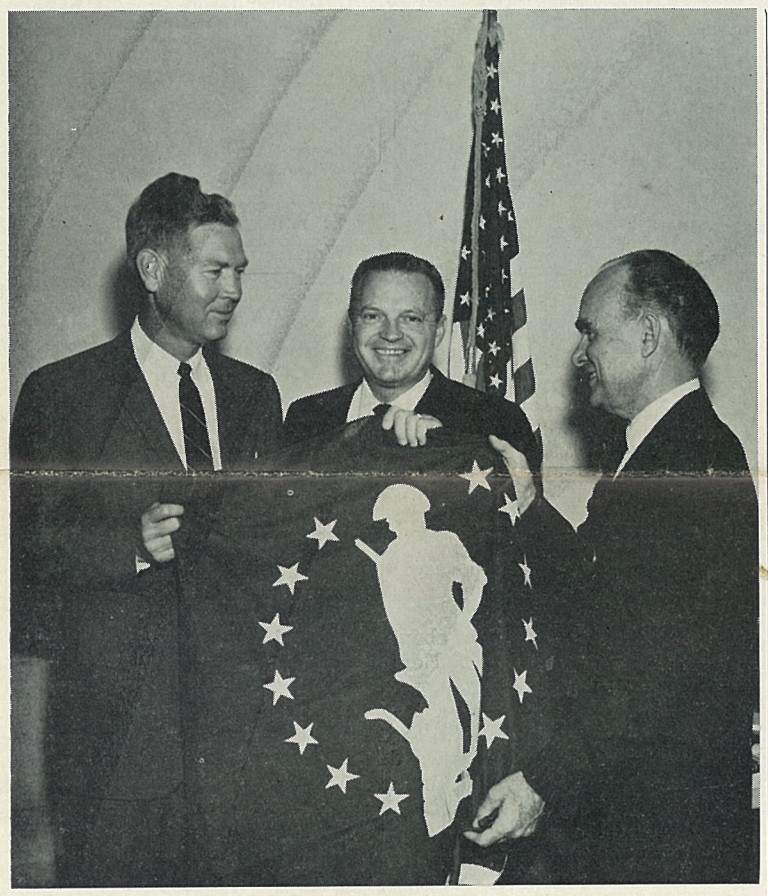
ASTRONAUTICS EDITION

NEWS

Vol. 17, No. 9 PUBLISHED BY GENERAL DYNAMICS CORPORATION Wednesday, April 22, 1964



CONGRATULATIONS — Algie A. Hendrix, right, General Dynamics vice president-industrial relations, presents Treasury Department award flag to J. R. Dempsey, left, Astronautics president, and M. V. Wisdom, Astro director of industrial relations.

Astro Exerting Strong Effort On Bond Buying

Emphasis will be on wholehearted participation by the entire GD/Astronautics "team" next week when the division opens its annual campaign to encourage employee purchase of U.S. Savings Bonds through payroll deduction.

Presently, 62 per cent of GD/Astro employees contribute to their country's welfare, their company's prestige, and their personal financial security through Savings Bond purchase.

During the present campaign—May 1 through May 8—primary effort will be made to reach the remaining 38 per cent: the non-bond buyers.

Division President J. R. Dempsey is serving as chairman of this year's campaign, and has sent a personal letter to all employees who do not presently buy bonds.

At the close of last year's effort, GD/Astro employees led all General Dynamics divisions with 73 per cent signed for bond purchases. Closest contender was GD/Convair with 71 per cent.

During the current campaign, solicitations of all non-buyers will be conducted within departments. Department coordinators will be briefed at a meeting April 29.

Under the payroll deduction plan, employees may authorize the company to withhold as little as $1.25 per week from their paychecks. When enough has accumulated to complete purchase of a bond (in the denomination specified by the employee), it is mailed directly to his home.

Obvious advantages of bond purchases include: an easy means of building family savings for emergencies, or for "something special" in the future; 3¾ per cent interest when bonds are held to maturity; insured savings, since bonds, if lost, can be replaced.

Implicit in the campaign effort is a desire to achieve a high "performance level" from Astro employees in this program, as well as in all of the division's undertakings.

Present participants in the bond purchase program may wish to increase their present deductions, in order to channel into savings a portion of funds newly available to them as a result of decreased income tax rates.

They may do so at any time by completing a tab card, available from solicitors during the campaign, or at employee services offices.

$4½ Million Cut In Costs Listed

Total net savings of about $4½ million have been reported by GD/Astronautics material department as a result of cost reduction and value control activities during the last six months.

During this period, department supervision responded 100 per cent to a division goal of "one cost reduction proposal from every supervisor during the first quarter of 1964."

Further reaction was sparked when H. E. Moose, director of material, extended a similar challenge to all department personnel—hourly and salaried alike—to join the cost cutting effort.

To date, more than 175 projects have been submitted!

Two full-time value specialists with practical backgrounds in engineering and manufacturing fields (since many of the decisions concern hardware) are assigned to assist in review and implementation of projects generated within the department.

They are aided in various purchasing groups by a select group of buyers who assist in keeping the "value received" concept before the men who actually spend the money.

"Since our buyers are the implementing force in the program, it is essential that they fully understand the value message," Moose said. "Only through them can we fully ascertain and utilize the knowledge of our many suppliers to achieve 'essential function at the lowest possible cost.'"

Material department suggestions have involved both administrative improvements and hard-

(Continued on Page 2)

Lewis Reveals $15 Million GD Investments

General Dynamics Corporation has authorized $15 million this year for construction of new facilities and purchase of equipment for its five Southern California divisions, Roger Lewis, president, disclosed recently in an appearance before the GD/Pomona Management Club.

He cited the figure in announcing plans for construction of a new $1.9 million engineering building at the Pomona division.

Other divisions in Southern California are Astronautics, Convair, General Atomic and Electronics, all in San Diego.

Allocating $15 million for 1964 attests to "the Corporation's growing vigor and its continuing confidence in the future of our operations in Southern California," he said.

"Today's more complex weapon and space systems require an

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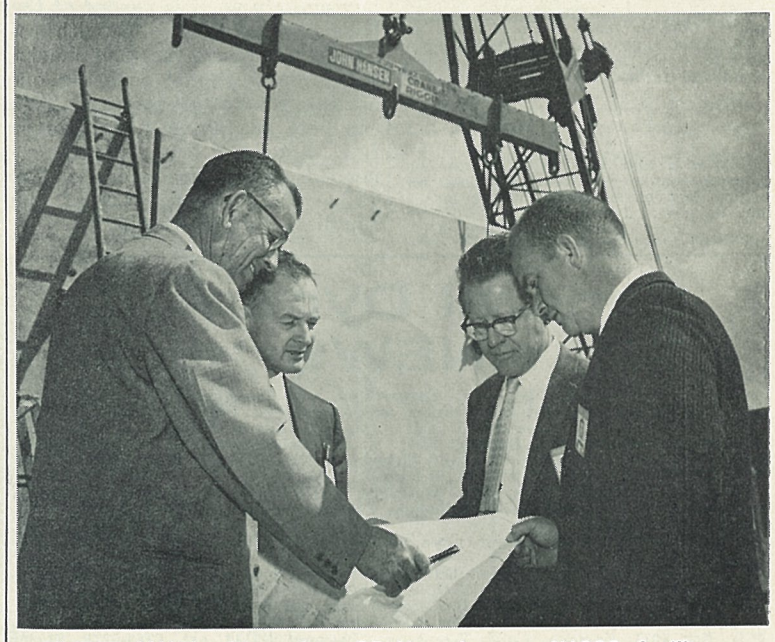


UNDER WAY—Discussing GD/Astro's new IMSSS facility now taking form at the main plant are Bob Gaines, left, Bob Grimshaw, Stan Rogers and Wes Muse. Gaines, Grimshaw and Muse represent plant engineering (Dept. 250-2) on project, while Rogers is project manager for life sciences.

Camp and Slingsby 'Square Off' In Mgt. Club President Race

Twenty-two "political hats" have been tossed into the ring as Astronautics Management Club swings into its annual task of electing officers and board of control members for the coming year.

Heading the nominees are presidential aspirants R. G. "Dick" Camp and Don K. Slingsby.

P. I. Harr, nominating committee chairman, and his committee selected 21 candidates for presentation to members. One additional candidate was nominated from the floor at the April 10 meeting.

Club members vote during May with officers to be installed in June.

Named candidates for the office of first vice president were J. R. King and C. C. Dragila. J. C. Duffy and A. J. Gillette Jr., will vie for the post of second vice president.

George Di Matteo and J. L. Mumford seek the recording secretary post, with A. H. Hausrath and J. F. Baebler running for financial secretary. A. R. Mosco and G. J. Gonlag seek votes as treasurer.

Members will elect two board of control members to fill three-year terms, selecting from a field of J. E. Lieb, R. T. Blair and W. J. Cushman. D. P. Wright Jr., P. S. Bazler and N. D. Baird are candidates for one two-year post. Candidates for two vacant one-year board posts are L. S. Franklin, R. C. Emerson, P. R. Green and B. A. Mendoza.

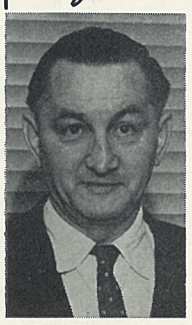
Wallrabenstein 'Man of Month'

First honors in GD/Astro Management Club's "Man-of-the-Month" award were presented at the club's April 10 meeting to E. H. Wallrabenstein, Dept. 715.

He was cited for his active participation in GD/Astro cost reduction programs through three approved Cost Improvement Proposals (CIPs) during March. Together, his ideas will save his department 711 man-hours dur-

(Continued on Page 2)

Log Book Entries



Mike Dublin, GD/Astro Dept. 510-0, recently received his 25-year service emblem.

Service Emblems

Service emblems due during the period April 16 through April 30.

Twenty-five-year: Dept. 151-0, E. V. Laird.

Twenty-year: Dept. 143-2, M. L. Berry; Dept. 525-6, Alfred Wilson; Dept. 731-0, V. E. Hoagland; Dept. 831-1, A. M. Goldstein.

Fifteen-year: Dept. 522-8, C. L. Maine; Dept. 673-0, K. F. Eveland; Dept. 756-0, J. R. Estrada; Dept. 759-0, Ione H. Brown; Dept. 833-1, R. G. Anderson; Dept. 834-1, P. R. Oncley; Dept. 970-1, V. E. Distad.

Ten-year: Dept. 130-1, P. E. Reed; Dept. 193-1, Helen L. Husseman; Dept. 250, L. P. Hintz, P. E. Moore Jr.; Dept. 290-3, Marlene L. Byrne; Dept. 336-5, C. T. Chunn; Dept. 369-2, R. C. Middleton; Dept. 382-1, V. C. Hamilton; Dept. 547-3, E. C. Madsen; Dept. 661-7, H. L. Merritt; Dept. 780, C. H. Pedersen, Maude M. Punneo; Dept. 832-1, Ann K. Parish; Dept. 870-1, G. W. Barrow.

ALTUS AFB

Fifteen-year: Dept. 391-3, C. W. Levell.

PLATTSBURGH AFB

Fifteen-year: Dept. 394-3, J. R. Chapin.

WALKER AFB

Ten-year: Dept. 393-3, J. R. Dent.

Births

AVITABLE — Daughter, Jamar Suzanne, 8 lbs., 9 oz., born March 10 to Mr. and Mrs. Ralph P. Avitable, Dept. 956-0.

HILL—Daughter, Deanna Lynn, 7 lbs., 10 oz., born March 10 to Mr. and Mrs. Wesley A. Hill, Dept. 988-4.

Deaths

CARLILE—Austin L., Dept. 756-0. Died April 12. Survived by wife, Olga.

JOHNSON—Herman Lee Jr., Dept. 143-2. Died April 5. Survived by wife, Frances; daughter, Mrs. Ronald Knight.

OLIVER—George F., Dept. 780-2. Died April 5. Survived by two children; mother, Mrs. Olaf Kuehne.

MARVIN—George A., Dept. 731-0. Died April 5. Survived by wife, Helen; six children.

Retirements

BURNS—F. J., Dept. 151-0. Seniority date, Feb. 28, 1951. Retired Feb. 28.

FRINK—A. P., Dept. 976-1. Seniority date Nov. 13, 1950. Retired April 1.

GOSSETT—O. P., Dept. 759-0. Seniority date, July 10, 1956. Retired March 31.

GROSS—L. D., Dept. 780-1. Seniority date, Sept. 10, 1947. Retired March 1.

HARTMAN—Walter K., Dept. 963-2. Seniority date, June 5, 1951. Retired March 31.

ISHAM—B. O., Dept. 528-5. Seniority date, April 15, 1946. Retired April 1.

KOZLOFF—V. S., Dept. 593-6. Seniority date, Oct. 31, 1955. Retired April 1.

LEE—George R., Dept. 556-2. Seniority date, Dec. 17, 1956. Retired April 1.

VAWTER—J. P., Dept. 567-6. Seniority date, Oct. 1, 1956. Retired April 1.

Personals

I wish to express my most sincere thanks for the thoughtfulness and sympathy expressed by our many Astro friends at the passing of my beloved wife, Jessie Ann Lasswell.

Harold A. Lasswell, Dept. 210-0.

* * *

My children and I would like to express our deepest thanks to our many Astro friends for their many thoughtful acts at the loss of our dear wife and mother, Lillian Weber.

C. E. Weber, Dept. 759-0
Karen and Mark.

* * *

The family of Leonard E. (Pappy) Oldfield (Convair Dept. 25, ret.) extends its deepest appreciation to his many Convair and Astro friends for their kind expressions of sympathy and sorrow at the loss of their beloved husband and father.

Mrs. Jenne Oldfield,
Dorothy (Astro Dept. 596-0),
Patricia and Leonard.

* * *

My wife and I wish to express our sincere thanks for your kindness and expressions of sympathy at the loss of our daughter, Judi.

Bob Benzwi, Dept. 952-3.

ARA's Spring Dance Tickets on Sale

Tickets for Astronautics Recreation Association's annual spring dance set for May 9 at the International Room, El Cortez Hotel, are now available at employee services outlets. They are $1 per person.

Buster Carlson and his ARA Band will provide music for this traditional event which kicks off a series of annual dances sponsored by ARA.

$4½ Million Cut Made in Buying Costs

(Continued from Page 1)

ware changes.

Most recently installed was a suggestion to eliminate a supplier administrative cost by establishing an approved material review program on the vendor's premises. A "cost avoidance" estimated at $427,000 resulted!

"Success of nearly all projects is dependent upon cooperation of several departments," Moose pointed out. "The widespread willingness of many groups to work together for a common end illustrates the interest and effort with which the division's cost reduction program has been received."

Typical result of joint effort is a recent saving of $18,000 on GD/Astro's life support system test chamber.

Following receipt of supplier proposals on a new work statement, a round-table conference of the selected vendor, GD/Astro engineering and procurement personnel, challenged every item on the statement in order to eliminate "frills" and find the most economical means of fulfilling actual needs.

Further emphasis on the supplier's role in reducing costs is seen in a current material department review of all "sole source" procurements in order to locate competitive vendors.

R. N. Babcock, chief of vendor research and value control, explained that procurement costs drop significantly whenever competition enters the picture.

"Since vendor capabilities change constantly, we often find that an item formerly available from only one company can now be obtained from several," he said.

With this in mind, 2,500 parts representing an annual cost of $400,000, and which have recently become available from several suppliers, are now being studied. Cost of these items may be reduced as much as 25 per cent, now that competition has been introduced.

Significant in future material department efforts toward cost reduction is a plan under way to include value control incentives in contracts with suppliers.

"Both DOD and NASA have adopted the three-fold policy of buying only what is needed at the lowest price compatible with reliability requirements; emphasizing incentives; and reducing operating costs," Moose said. "We can best guarantee our customer full value for every dollar expended by embracing a similar philosophy and encouraging our suppliers to participate."

General Dynamics NEWS

Published by General Dynamics Corporation, One Rockefeller Plaza, New York 20, N. Y.; with editorial headquarters at 3302 Pacific Highway, San Diego 12, Calif., P.O. Box 1950, telephone 296-6611, ext. 1071. Logan Jenkins, editor-in-chief.

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Affiliated editions of General Dynamics NEWS are published in Rochester, N. Y., covering GD/Electronics and Stromberg-Carlson, editorial offices, 100 Carlson Road, HUbbard 2-2200, ext. 2555. Fred E. Voss, editor; and at Groton, Conn., covering GD/Electric Boat, editorial offices at Groton, HIlltop 5-4321, ext. 300 and 513, Joseph Tracey, editor.

Long Term Planning Essential to Defense, Roger Lewis Advises

General Dynamics Corporation has strengthened its competitive posture and the future generally looks good, Roger Lewis, president, told members of the GD/Pomona Management Club at the April 10 meeting.

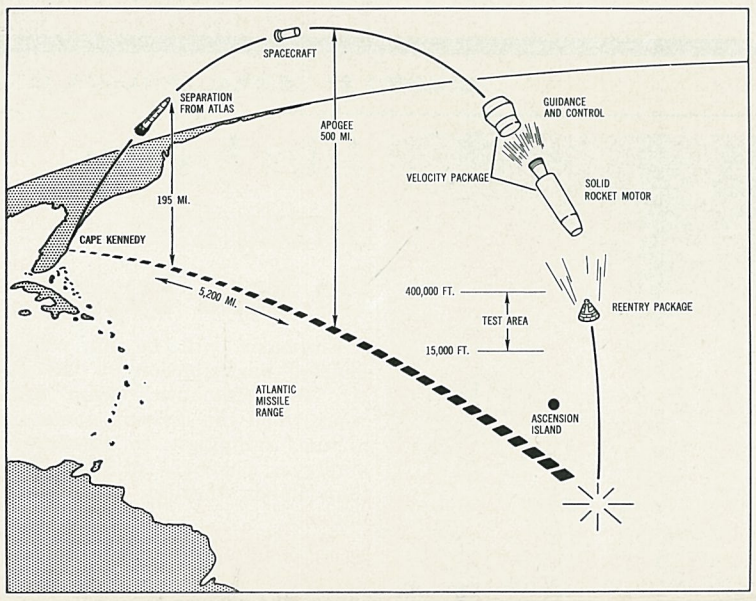
"The company has recovered from its severe losses of 1962. We finished 1963 'out of the banks' and pre-paid a part of our long term debt. The 880/990 program was concluded at $33 million less than anticipated," Lewis reported.

At the same time, the company has streamlined and strengthened its organization and made substantial investments in new facilities, such as acquisition of the Fore River Shipyard at Quincy, Mass. (GD/NEWS Jan. 2, 1964), and $15 million authorized for new facilities and equipment among the Southern California divisions (see accompanying story).

"Defense contractors have important responsibilities," Lewis continued. "Weapons systems have long development cycles and they must be ready when needed. While we hope fervently for peace, history is not reassuring and we must do our part to maintain U. S. strength."

Lewis said that as the weapons inventory of U. S. defense is filled, appropriations can be expected to level off or even decrease, thus making competition more and more severe.

"However, if we do the best job of design, development and production within the shortest time and least money we can view the future with confidence. We are determined to excel in every field in which we compete," he concluded.



Atlas Is Flawless as Usual In First Project Fire Flight

Another "first" in the field of space exploration was attributed to General Dynamics/Astronautics' versatile Atlas last week with the successful flight of the first of two planned Project Fire spacecraft.

Atlas 263-D (LV-3A) made the flight from Cape Kennedy.

Project Fire is this nation's first flight program to study high velocity re-entry conditions that will be encountered by spacecraft returning from the moon. It is a vital step in future manned lunar flights.

An Astronautics launch crew sent Atlas 263-D aloft from Complex 12 late in the afternoon of April 14. After normal booster staging and Atlas sustainer cutoff, retrorockets fired to slow Atlas as the spacecraft climbed to an apogee (high point) of about 500 miles in a long arc. Next came separation of a guidance package and the firing of a 10-foot solid rocket which sent the re-entry package hurtling toward the earth at speeds of about 25,000 miles per hour, more than seven miles per second. Between 400,000 and 15,000 feet the package transmitted data to stations below. Final impact was in the Atlantic some 5,200 miles downrange from Cape Kennedy.

Astro is integrating contractor for Project Fire, working under direction of NASA's Langley Research Center. Ling-Temco-Vought built the velocity package and Republic Aviation the re-entry vehicle.

Significant modifications of Atlas 263-D for this mission included utilization of retrorockets on the Atlas airframe, rather than the velocity package adapter, plus changes in Atlas' autopilot programmer to attain the trajectory and flight sequence peculiar to Project Fire missions.

Wallrabenstein 'Man of Month'

(Continued from Page 1)

ing 1964.

(The newly-instituted "Man-of-the-Month" award is similar in concept to the "MacSave-it" award presented at GD/Convair. Wallrabenstein had earlier been a "MacSave-it" winner when assigned to that division.)

The new "Man-of-the-Month" is a long-time General Dynamics employee. He joined GD/Convair in 1938 as a milling machine operator, and earned promotions to set-up and lead man, later to supervision, before transferring to GD/Astro in 1962.

In his approved CIPs, Wallrabenstein proposed that certain parts being planned for turret lathe operation be sent instead to the automatic screw machine where they could be completed five to seven times faster. Totally, his proposals concerned more than 10,000 parts.

Mgt. Club Ball Fans To Watch Dodgers

Astronautics Management Club has selected Sunday, May 3, for its annual group bus tour to Los Angeles to watch the Dodgers and the San Francisco Giants play at Chavez Ravine.

Buses will depart Astro between 10:30 and 11 a.m., returning following the afternoon game. Cost per person is $4 which includes a reserved seat, plus transportation. The trip is open to members and their families with reservations being made through boosters.

EXPLORERS CLUB ELECTS BOWEN

ARA Explorers Club has elected new officers for 1964. President is Dick Bowen, with Frank Hobbs, vice president, and Sandy Blum, secretary-treasurer.

Lewis Reveals Expansion Plans

(Continued from Page 1)

ever-increasing level of engineering capability," he said. "Our expenditures for facilities and capital equipment will further enlarge our research and development capability. They will make the Corporation still better equipped to respond to the needs of the armed services and the National Aeronautics and Space Administration for advanced weapons and space systems."

In addition to the new Pomona facility, this year's expenditures by the Corporation will be for such recently announced projects as the Astronautics division's new test site adjacent to the government test facility at Sycamore Canyon and the interplanetary manned space systems simulator being built at the Astronautics plant in San Diego. The 2,400-acre test site was purchased last year. Construction began in March on the space systems simulator.

The new two-story Pomona engineering building will have 108,000 sq. ft. of floor space and will be built entirely with Corporate funds, on Corporate-owned land. The site was purchased in December from the City of Pomona.

The new building will have a two-fold purpose—providing improved areas for current research and development and new product study, and offering additional office space for engineering management. Its design stresses flexibility so that it can easily be adapted to laboratory use and light manufacturing.

Work on the new Pomona engineering building will start immediately and is expected to be completed within seven months. Construction will be by L. E. Dixon Co., of San Gabriel, Calif. Architects are Stiles and Robert Clements Associates of Los Angeles.

★ ★ ★

SPACE SIMULATOR TAKING SHAPE

Completion is only weeks away on the building construction portion of GD/Astronautics' new Integrated Manned Space Systems Simulator (IMSSS), now taking shape adjacent to the life sciences wing of Bldg. 4 at the main plant.

As the first phase of a company-funded program to provide GD/Astro with one of industry's most advanced simulation facilities, $800,000 is presently authorized for IMSSS. Total cost of the full complex, to be developed over a five-year period, is about $1.8 million.

The IMSSS wing will contain nearly 5,000 sq. ft. of floor space and is being erected on a concrete slab foundation with concrete "tilt-up" walls.

It will consist of five major areas: the flight deck where space missions will be "flown," housed in a quiet room to minimize external disturbance; a simulation room producing the visual environment of space (realistic views of earth, moon, rendezvous vehicle, etc.) on the flight deck's three TV-screen "windows" via a very advanced closed-circuit TV system; a data center whose computers will program flights and record flight data; a lobby and observation area; and office space.

When fully operative later this year, IMSSS will permit simulation of space flight by manned or unmanned vehicles. It will enable spacecraft crews to meet problems and sensations similar to those of actual flights.

The simulator will be capable of "flying" any space mission foreseeable in the next decade, and will be used as a testing, research and development facility, and as an aid to space vehicle design.

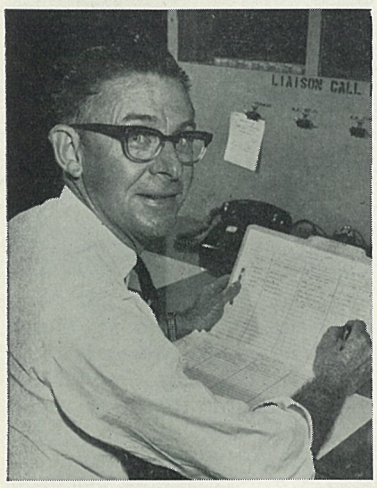
Construction coordination is provided by GD/Astro plant engineering (Dept. 250-2) with Wes Muse, project engineer, and Bob Gaines, field engineer.

Life science project manager for IMSSS is Stan Rogers, Dept. 591-0.

Secrets of Success . . .

Accident prevention will receive greater and greater attention throughout General Dynamics divisions this year. General Dynamics is proud of its record in the past (its divisions consistently have ranked among the safest plants in the country). However, the Corporation is determined to do even better in 1964 and succeeding years. Well organized safety programs are essential, but alert employees are even more vital. All divisions boast many departments that have gone for long periods without injuries, involving thousands of alert employees and hundreds of expert supervisors. To tap their "secrets of success" GD/NEWS has interviewed a sampling. Some tips on how their departments have achieved outstanding success appear on this page.

Housekeeping and First Aid Records Prove Valued Assist



KEEPING TABS — W. L. McKnight of GD/Fort Worth keeps daily reports that help him maintain excellent safety record.

GD/Fort Worth's Dept. 14 (tool services) has operated more than 16 years without a disabling injury. Here are some tips from key supervisors:

G. A. Frazier: "I'm a firm believer in keeping the subject of safety in mind at all times. Regular talk sessions among supervisors and between supervisors and their people are most helpful. I've even asked supervisors to describe on paper the conditions they think are the most desirable, just to keep them thinking on the subject."

W. L. McKnight: "Housekeeping is an absolute must . . . and I find it is helpful to keep daily housekeeping and first aid records and refer to them regularly. I had one employee who had not had an accident in ten years. Then his name started appearing on first aid reports. I talked with him every day, trying to fish out his problem. He finally confided that he was worrying about a personal situation. I'm no psychologist, but just talking about his trouble helped him."

J. E. Bobbitt: "Accidents don't just happen. They are caused by physical, mental or mechanical failure."

C. E. Allen: "People play the biggest role in keeping a safe department safe. When they discuss accidents and near-accidents their awareness of the presence of danger prevents many an injury."

COMMITTEEMEN — All divisions agree safety committeemen are invaluable. Committeeman R. L. Hardee, left, of GD/Fort Worth discusses tag with E. J. Luna.

'Taking a Chance, Just This Once' Can Stand Being Discouraged

L. J. Enfield, GD/Pomona machine shop general foreman, in speaking of his department's long-time successful safety program, emphasized the importance of having every employee aware of dangers involved in "taking a chance."

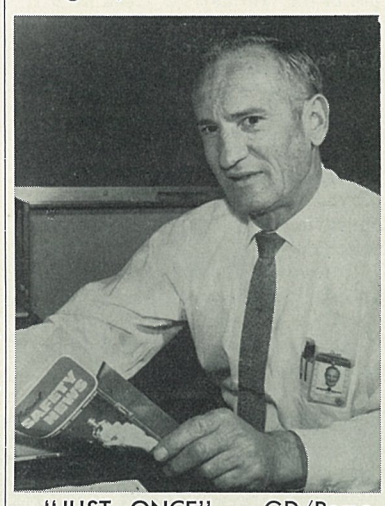
"We've found in past investigations of minor accidents—the kind most prevalent—that injured persons knew the safety rules and proper procedures," Enfield said. "They were aware that what they were doing might result in injury, but they decided to 'try and get by this time.' "

As an example, Enfield cited the case of a man pushing on a wrench in a manner so that his knuckles would be skinned if the wrench slipped. Instead of changing to a different and safe wrench position or using the proper length handle or an extension, too many persons try to get by—"just this once."

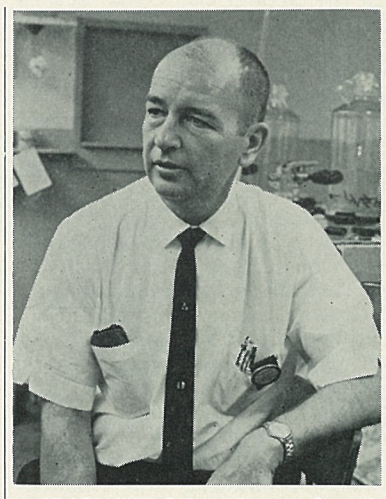
"Everyone must realize that there is a right way to do every job. That way has been properly planned to be safe. Short cuts or deviations result in accidents," Enfield emphasized.

All supervisors and employee safety committeemen in the GD/Pomona machine shop work together in spotting and correcting any lapse in good safety habits.

"Most of us develop proper habits after we realize that rules and programs are designed for our own good," Enfield concluded.



"JUST ONCE" — GD/Pomona's L. J. Enfield hits risk-taking.



KNOWLEDGE — Roger Steadman of GD/Electronics advocates thorough understanding of job.

Knowledge Best Protection, Says GD/E's Steadman

"One man cut by a shower of shattered glass makes a believer of all of us," Roger Steadman of GD/Electronics-San Diego said in pointing out the particular hazards present in development and fabrication of Charactron® Shaped Beam Tubes.

Steadman, who supervises the tube shop, says that most accidents in his area involve encountering an unknown factor in the glass.

Every means possible is taken, through correct design, processes, and inspection, to build safety into the glass, and Steadman, himself, undertakes the never-ending task of educating his people to insure that they do not expose themselves to unnecessary risks, taking full advantage of all personal protection equipment.

"I try to see that all of my people are as familiar as I am with strain patterns which might cause tube implosion (collapse of a glass tube, with the resulting rebound of broken jagged glass). A little knowledge breeds contempt, they say, and I am determined that everyone working with the tubes knows a LOT about the entire process.

"I encourage an informal study program, supplying technical books and material. I feel that anyone who is interested in his work, and constantly learning more about it, is going to be more alert and careful."

Safety Engineers Inspire Programs

The inspiration afforded by safety engineers themselves is an important factor in success in safety programs.

One supervisor said:

"These men are a constant source of encouragement and stimulation. They help us follow through with ideas to make our areas safer and we feel they are personally involved in our problems, not just someone to be reckoned with."

Do You Care? Then Heavens! Why Make a Secret Out of It?

"Constant employee interest in the safety effort is the single most important element," M. M. Goodhart, GD/Astronautics general foreman, declares.

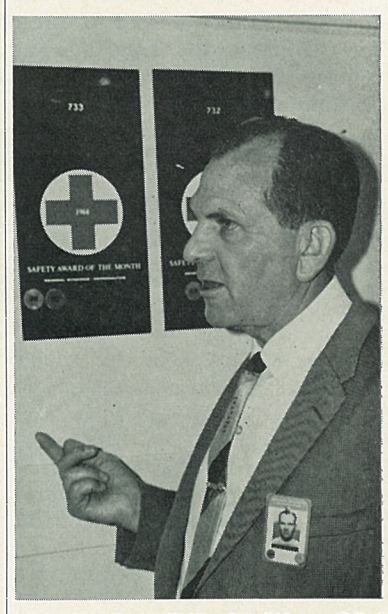
"In sheet metal and processing we 'talk it up' continuously and maintain a true 'open door' policy in encouraging suggestions. Whether an idea is good or bad it gets prompt and serious attention. Almost every machine or tool in these departments has safety devices suggested by operators.

"For example, one heat treat employee watched red hot items emerging from ovens and being handled with asbestos gloves. Sooner or later, he reasoned, there would be burns. With plenty of encouragement from supervision he designed pinchers that could be attached to cranes. That's what we use now!

"I think it is most important to CARE, and to let the people around you know that you CARE about a safer and more efficient operation. If a man with an idea encounters disinterest in his boss he soon will tire of advancing any ideas, and probably become disinterested in his job, too."

Everyone likes recognition and Goodhart finds winning safety contests is good for the departments. When each new honor is won Goodhart writes a personal letter of congratulation to every man and woman on the team.

Goodhart joined many others in crediting inspiration of professional safety engineers as vitally important to success.



PAT ON THE BACK — GD/Astro's M. M. Goodhart writes personal letter to every team member when departments win awards. He is firm believer in encouraging everyone to make suggestions on how work areas can be made safer.

Know the Job, Know the Perils, Convair's Benedict Advises

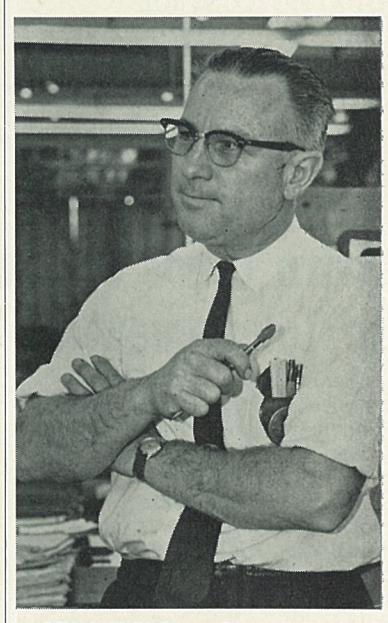
"Every man assigned to me is, first of all, given a personally guided 'safety' tour of the area," says Jack Benedict, C-141 assistant foreman at GD/Convair.

"We explain the job thoroughly from a safety viewpoint—what the duties are, what tools will be used, how they must be held to be operated safely, what safety equipment must be worn, and what specific safety problems might exist.

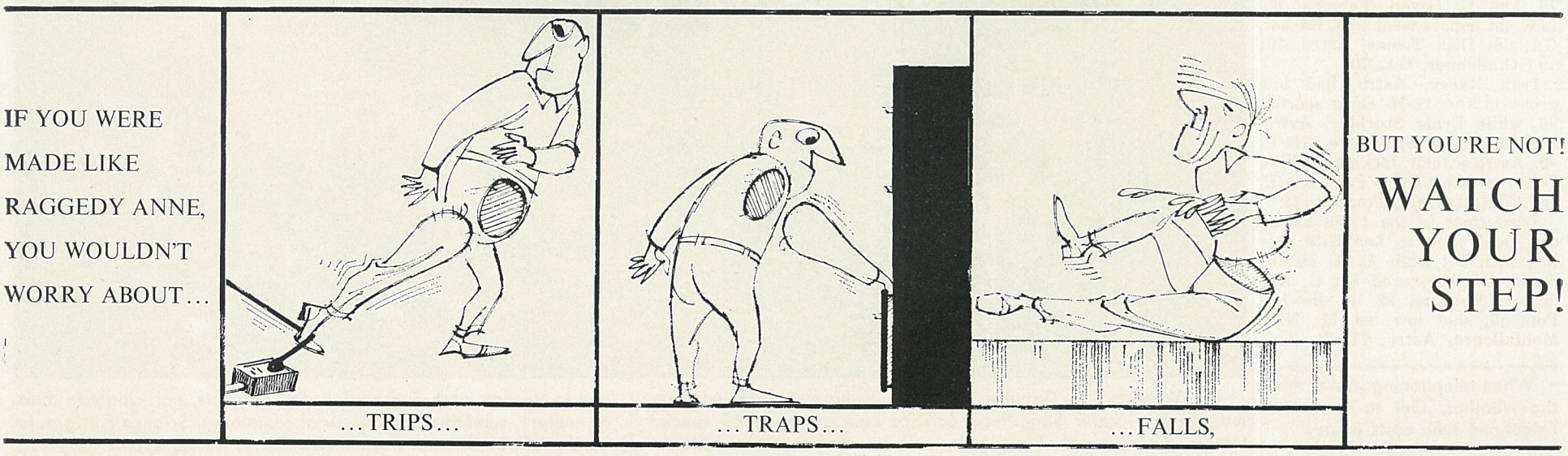
"For instance, in the horizontal stabilizer group, men must work on a ramp-type platform. This presents special safety risks. Anything set down on the slope will roll down and hit someone below. Men can turn an ankle or trip and fall on the incline. And, inside the stabilizer there isn't room for a worker to stand upright without banging his head.

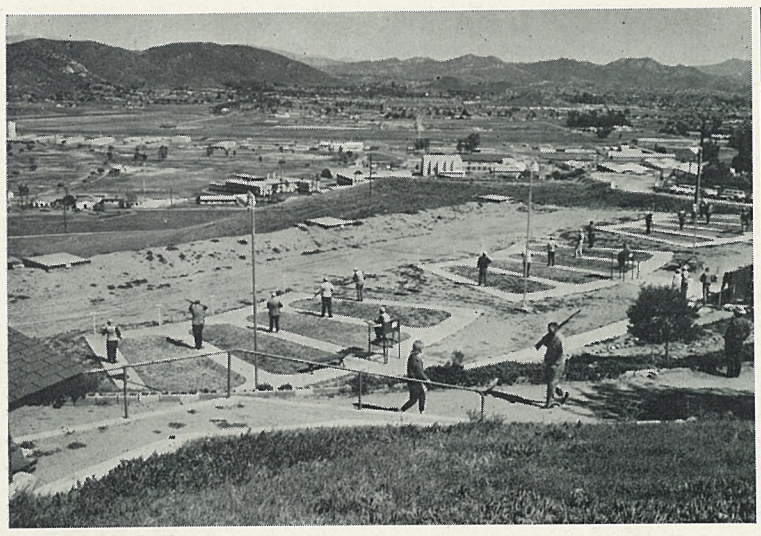
"We remind our people constantly to watch themselves—think of every move they make, every tool they use, to keep alert and be safe. It's the easiest thing in the world to get hurt if you're going around half asleep.

"I remember too well seeing my partner on the PBY assembly line get an eye swiped out by an unguarded electric drill," recounted Benedict, who joined the company as a young man in Buffalo, N. Y. "Believe me, it's one of the reasons I'm eternally harping on safety goggles or face shields, whenever there's the slightest danger."



REMINDERS — Convair's Jack Benedict recommends "safety tour" of area for new arrivals. He believes thorough knowledge of job and forewarning of specific dangers is of paramount importance.





ON THE RANGE—Sharpshooters line up on CRA-ARA Gun Club range at Gillespie Field in one of many events arranged regularly for GD enthusiasts. Gun Club is probably most popular of all recreational activities sponsored by San Diego divisions. — Photo by C. Robert Learn.

Shooters Brave Winds and Chill For CRA-ARA Gun Club Contest

Fifty-eight shooters from all parts of Southern California braved a chilly, windy day to compete in CRA-ARA Gun Club's registered ATA trapshoot April 5.

At least a dozen drove and flew to the Gillespie Field site from Imperial Valley, in spite of sand storms and strong winds which closed highways later in the day.

Sona Wong of El Centro won two transistor radios — one for his score of 92 which took first in 16-yd. Class A, and the other for his high score of 79 in doubles.

W. U. Gatterman of Astro shot a 91 to place second in 16-yd. Class A. His prize was a box of primed 12-ga. hulls.

Ties tangled Class B, C, and D top spots, with shoot-offs deciding first-prize winners. Les Tucker of El Centro won the radio and Don Estes of Lakeside, the box of hulls in Class B. They had tied with scores of 93. In Class C Bill Duncan of Escondido was judged first and Art Berry of Lemon Grove, second. Their tied score was 91. Class D had a three-way tie between Bill Crafton of San Diego, Juanita Cole, Calexico, and M. B. Knutsen of La Mesa. Crafton won the shoot-off and radio; Mrs. Cole, the box of hulls for second place. Score was 85.

In the handicap event, Nathan Tate was first with 94, winning a single-action Frontier pistol with an extra .22 magnum cylinder. George Harbaugh of Astro was second with 88. His prize was a single-action Frontier pistol. Norman Kline of El Centro took home a transistor radio for his 87-point third place.

High junior was Gene Lumsden of South Gate who won a transistor radio for his 76.

Margaret Sprague of Torrance was high lady with 78 points to take home a pair of opera glasses.

Doyle to Address Value Engineers

C. W. Doyle, GD/Fort Worth cost reduction coordinator, will be main speaker at the San Diego Chapter, Society of American Value Engineers, next Tuesday evening (April 28) in the Mission Room of the Mission Valley Inn.

Reservations for the $3.50 dinner meeting are being taken now by E. A. Lindem, Astro main plant, ext. 1933; Wayne Turner, Convair Plant 1, ext. 2568; W. D. Garrett, GD/E Plant 1, ext. 2910; R. C. Mansell, GD/E Plant 2, ext. 36.

QUALITY CONTROL SOCIETY TO MEET

Roland Finch, director of research, and Louis Canedo, quality control manager, both of Westgate California Corporation, will address the San Diego Chapter, American Society of Quality Control May 11 at the Islandia Hotel.

Astro Leads Divisions Competing In Tournament at San Luis Rey

Teams from four General Dynamics divisions clashed earlier this month in the spring edition of an inter-divisional golf match at San Luis Rey.

Astro led in point standings with 339, followed by Pomona with 328, while General Atomic scored 259 and GD/Electronics tallied 209. These scores will be added to results of a rematch this fall, with a traveling trophy going to the team with the highest total.

Individual honors in the 5-11 handicap bracket went to Adam Grik, Pomona, with a low gross 75, while R. Schively, GA, scored 79, and E. Lovell, Pomona, 80. Low net honors went to J. Barber, GA, 68; Dick Tobias, Astro, 70; and G. Bonner, GA, 70.

Ivan Raney, Astro, had low gross in the 12-16 class scoring 86, while Ernie Stuchley, Astro, had 88, and G. S. Elmore, GD/E, 90. Astro's John Jackman scored 74 for low net; Ernie Paul, GD/E, 75; F. Hottenroth, Pomona, 75.

Low gross in the 17-20 handicap class went to Lee Kite, Astro, with 86; while L. A. DiVincenzo, GD/E, scored 89; C. Anderson, Pomona, 92. F. Bowles, Pomona, shot low net 71; Nick Montallegro, Astro, 71; R. Benham, General Atomic, 75.

In the 21-and-over class, an 87 by R. Fenwick, Pomona, was low gross, followed by D. F. Jackson and D. V. Hill of GD/E with 94 and 95.

John Lombardo, GD/Electronics-SD manager, had low net 71. W. H. Jones, GD/E took second low net, and B. Burke, Pomona, third.

When telephoning, never mind the weather. Get to the point. Telephone time costs money.

76 General Dynamics Sons, Daughters Exhibit At Fair, 42 Win Honors

A GD/Convair daughter won Girls' Senior Sweepstakes honors in the Greater San Diego Science Fair this month, while 75 other General Dynamics sons and daughters shared 41 special awards for their displays.

Sweepstakes winner is Tamzon Feeney, daughter of Donald M. Feeney, GD/Convair Dept. 6-22. She is 14 years old, and in the 10th grade at Our Lady of Peace Academy. Her father is currently on loan to Fort Worth division.

Tamzon's project and display, "Growth comparisons of excised seed embryos and standard seed propagation," earned her a first place award among senior girls' exhibits in botany, and as Sweepstakes winner, she will display it next month at National Science Fair International in Baltimore.

Other General Dynamics youngsters earned a total of 11 firsts, 14 seconds, nine thirds, and seven special awards during the Fair in Balboa Park's Federal Bldg., April 8-12. All Fair exhibitors had previously won preliminary events at their individual schools prior to acceptance for the Greater San Diego Fair.

The Science Fair program is an effort sponsored jointly by local military, industrial and educational institutions to provide additional stimulus for able students to actively apply their knowledge and learn methods of critical thinking through problem solving in math and science.

Both GD/Convair President J. H. Famme and J. R. Dempsey, GD/Astro president, serve on the Fair's Board of Governors, with Dempsey this year again filling the post of chairman.

Jack Croft, GD/Astro chief of educational services, and Emory Thurston, also of GD/Astro, served on the management committee and as co-chairmen for judging.

Judging committee staff this year included Dr. Ed Creutz, vice president—research and development, General Atomic, and Dr. H. F. Dunholter, director, research and advanced technology, GD/Astro. Laura A. McGraw of GD/Astro served in a clerical capacity.

Special judges, all assigned to GD/Astro, were Col. R. B. Kelly and Majors Frank Silvasy, John Doyle, Fred Gluck, Joseph Gricius, Michael Kentosh, all of U.S. Air Force; and NASA representatives Richard King, W. J. Chabot, Bill Hein and Claude Wilson.

Other judges were C. E. Klein and H. J. Stuart of GD/Electronics; Dr. Giovanni Bucolo, Dr. M. A. Fineman, W. V. Goeddel, Dr. R. H. Miller Jr., Dr. H. R. Snodgrass, G. R. Tully Jr., Dr. D. O. Wissinger of General Atomic.

GD/Astro men serving as judges were Dr. H. E. Adelson, R. F. Arenz, D. E. Bain, W. M. Brandenberg, Dr. J. C. Breeze, M. D. Campbell, J. D. Chiavario (Rocketdyne rep.), William Clausen, Dr. G. J. Goble, Les Harr, J. F. Haskins, D. P. Hoffman, H. M. Ikerd, Dr. Samuel Kaye, Dr. R. M. Leger, V. A. Martin, Dr. J. M. Maughmer, Dr. A. W. McReynolds, Dr. Arthur Redelsheimer, Dr. W. J. Schart, Dr. Leonard Schonberger (MD), E. W. Schwartz, R. S. Storey, T. T. Tanalski, Dr. P. E. Wilson, Aaron Wolgin, E. H. Wrench, Richard Forrest, William Stewart, Everett Lindem.

GD/Astro sons and daughters exhibiting projects in the Fair were:

Nancy Albers, Dennis P. Bader, Kay Barnier, Janice Bauer, John Boland, Cindi Bonsignore, John Breeze, Clifford Brown, Matthew Coleman, John Curtis, John C. Dobyne III, John Edwards, Pamela Franson, Donald E. French.

Jeffrey Greensite, Ken Happel, Gail Harmon, Michelle Harter, Kathleen Herring, Stephen Irwin, Susan Jaeger, David Johnston, Frank J. Jonelis, Robert Karr, Ellen Kossyta, Larry S. Landos, Christopher Lipsett, Jerry Lopez, David McQuoid.

Robert Pass, Patrick Passenheim, Holly Powell, Matthew Redlinger, Toni Ronstadt, William Root, Terry Siden, Craig Skidmore, Robert Spencer, William Stecker, Dennis Stone, Dennis Twiss, Ann Walsh, William Weaver.

David Wilson, Lynne Ellen Withee, James Wood, John Zeolla, Susan Zylius.

Entrants who are GD/Electronics youngsters were Charles Barksdale, Wendy Gniffke, Michael A. Tyndale and Leonard Viejo.

GD/Convair students displaying projects were Donald Atha, Denise Botticelli, Steven Bowles, Tamzon Feeney, Adriana Pazmany, Peter Paul Principe, Beth Romanowich and Jerome Tiesen.

Exhibitors whose parents are employed at GD/General Atomic are Gary Allen, Mark Allen, Stephen Borders, Margery Brown, David Goeddel, Jeff Hetherington, Eileen Kalk, Greg Mattson, Jack Norris, Michael Powell, David Siman, Gregory Simmons, Hugh Stewart, David Voorhies and Lyle Weiman.

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Young Exhibitors Tour Plants at SD

Groups of young exhibitors in the recent Greater San Diego Science Fair were given personally conducted tours through three General Dynamics divisions the week of April 6-10.

Astronautics' main plant on Kearny Mesa, General Atomic, and GD/Electronics-SD data products facility were opened to different groups of aspiring scientists.

At GD/E Plant 2 they viewed the S-C 4020 computer-recorder and S-C 1090 display console in operation. As they left, each was given a sack of surplus, but usable, transistors, capacitors, and other small electronic components.

Instruction Society Will Hear Reports

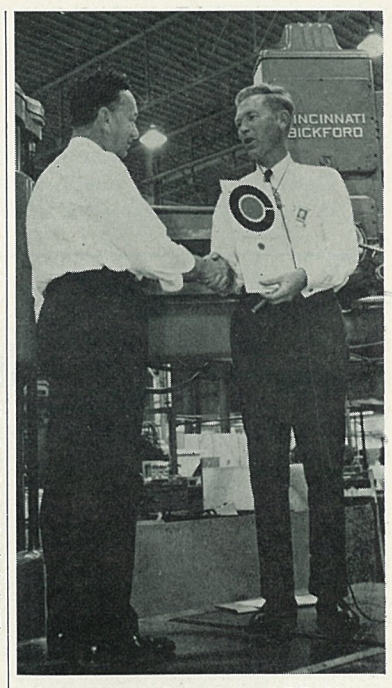
San Diego Chapter members of National Society for Programmed Instruction will hear a detailed report of the national convention at the April 30 meeting, 7:30 p.m., Convair cafeteria, Pacific Hwy., according to Griff Williams of GD/Convair, chapter president.

An account of convention proceedings will be given by three GD/Convair delegates who attended the San Antonio, Texas, gathering April 1-4. J. D. Meacham, Charles Keys, Dale Ball, all of Convair technical publications, were at the annual meeting with Meacham acting as chairman of technical presentations, and Keys participating as member of the panel on "Industrial Uses of P.I."

Astro Salvage Yard Will Be Open May 2

Astro's salvage yard at the Kearny Mesa plant will be open the morning of May 2 for employee sales. The Astro yard is operating on a once-a-month schedule.

Convair's Plant 1 yard, still on an every-other-week basis, will be open to GD people this coming Saturday (April 25) and May 9 from 8 a.m. until noon.



WELL DONE — GD/Astro Craftsmanship award for March was won by employees in main plant machine shop (Dept. 731). Here General Foreman Walt Herchold, left, accepts honor and congratulations from President J. R. Dempsey on behalf of Foremen H. W. Anderson and Ray Schmieder, and all Dept. 731 employees.

CITED—E. H. Wallrabenstein accepts plaque honoring him as GD/Astro Management Club's Man-of-the-Month. Gordon Prentice, chairman of club's awards committee, made presentation. During March, Wallrabenstein submitted CIPs with savings of 711 manhours.

Husband-Wife Teams Win Bridge Tourney

Marvin and Mary Ann French were local north-south winners, and Tony and Jo Miller won east-west, in the section of the National Industrial Recreation Association (NIRA) par tourney conducted March 20 by ARA Bridge Club.

Winners received trophies awarded by ARA, and a full master point. Their scores will be entered in regional and national competition for NIRA honors.

Winners at Bridge Club's March 27 session were H. R. McCullough and Bob Rustad, N-S, with Norma Tuttle and Elma Buchanan, E-W.

ALL WINNERS — General Dynamics youngsters, pictured after judging in Greater San Diego Science Fair, captured 42 special honors during event. Biggest "prize" for contestants is opportunity to display work and confer with scientists, participate in tours of military, scientific and industrial complexes. Science Fair groups visited GD/E, General Atomic, GD/Astro, during event.

Sports & Recreation

ARA Rockhounds Plan Gem Show

An open invitation to all GD/Astro employees to participate in its first full-scale gem show has been issued by ARA Rockhounds.

Scheduled for ARA Clubhouse, May 23 and 24, the show will include unusual ores and minerals, crystals, petrified woods, fossils, etc. Club members will display mineral and gem specimens, lapidary work from the club workshop, handcrafted jewelry and related items.

The show will be non-competitive, and all taking part will receive participation ribbons. Rockhounds will supply 100 display cases and standard specimen labels for exhibitors' use.

Full details on the show are available from Ernie Twiss, show chairman, Plant 1, ext. 2170, or Commissioner Fred Baugh, main plant, exts. 2580 or 1446.

ARA Calendar

(GD/Astronautics Recreation Association has some 40 activities in operation for employees. For information call ARA Headquarters, ext. 1111.)

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BOWLING — Applications for ARA summer leagues now available at employee services outlets.

CAKE DECORATING — Free classes begin April 21, 9-11 a.m., ARA Clubhouse. Instructor, Gil Hutter.

DANCE — ARA Spring Dance, May 9, El Cortez Hotel. Buster Carlson's ARA band. Tickets $1 at employee services outlets.

DRAMA — Astro Players "The Curious Savage" extended by popular demand. Final performance, 8:30 p.m., Saturday (April 25), ARA Clubhouse. Tickets at door.

GARDEN — Club meets 7:30 p.m., May 6, Balboa Park's Floral Assn. Bldg. Dahlia culture featured. Slide show of prize-winning dahlias.

GOLF LESSONS — Men's classes open May 5, Mission Bay Golf Course. Sessions to be held Tuesdays, 7-9 p.m. Ten lessons for $10. Register at employee services outlets.

HI-FI/MUSIC — Lecture and demonstration, "Percussion Instruments: Caveman to Jazzman," with G. N. Sorenson. ARA Clubhouse, 8 p.m., April 29. Free.

PISTOL — Club matches, 9:15 a.m., April 26, San Diego Police Pistol Range.

ROCKHOUNDS — First club gem show, May 23-24, ARA Clubhouse. Details from Ernie Twiss, Plant 1, ext. 2170.

SCULPTURE — Club meets Mondays, 7:30 to 10 p.m., art room, ARA Clubhouse. Information from Francis Pall, Plant 19, ext. 1386.

TEEN CLUB — Dance, 7:30 to 11 p.m., May 2, ARA Clubhouse. Details of "Teen-Age Sweetheart" contest to be announced.

TWILIGHT GOLF — Entries now open for leagues starting May 25. Forms at employee services outlets.

Toastmaster Club Meets Saturdays

Potential Toastmasters with "scheduling problems" may be interested in a group which meets Saturdays at 8 a.m. at Walker-Scott store, College Grove Shopping Center.

GD/Astro's Bob Byron, Dept. 170-1, is educational vice president of the club (Toastmasters #623), and will provide additional information to those calling him at main plant, ext. 680.

ARA Twilight Golf Sign-ups Under Way

Sign-ups opened this week for ARA's popular Twilight Golf leagues and will be accepted through noon, May 15. Play will begin May 25.

Cost per team for the season-long program is $25, with $15 earmarked for league prizes and the balance for forfeit fees. (Each time a team member forfeits, $1 will go into the prize fund. Unused forfeit balance will be returned to teams at season's end.)

Detailed instructions will be issued to captains through employee services by May 20.

Wayne Pence Has Low Gross

Wayne Pence was top man in ARA Golf Club's March tournament at Carlton Oaks, with a gross score of 74 in the 0-12 handicap bracket. Following were Jack Nichols with 77 and Paul Hooten with 78.

Net honors in class went to L. Gibson with 69, Don Cheek with 70, and Pat Bourgeois, Hal Wilson and Fulton Smith, each with 71.

Bob Franc and Norm Ryan each shot gross 85s in the 13-16 handicap range, followed by 88s from Tom McColloch and Cliff Gordon. Low net scorers were P. Kenny with 71, Lee Chastain 72, Chuck Petty and George Loudermilk, 74s.

Among 17-21 handicappers, Lee Kite's 77 was low gross, with Art Braidic shooting 83, and T. Cottingham, 85. Low net was Phil Parker's 64, while Pete Mattson tallied 67 and Bill Nicklaus, 72.

In the 22-and-over class, 87 from B. Perin was low gross, with 98s from Vern Boyer and Bert Emerson. Joe Terramagra shot low net 71, Art Holzman 73, and Fred Wynkoop, 74.

'Teen Sweetheart' Will Be Selected

Details of a "Teen-age Sweetheart" contest will be announced at ARA Teen Club's dance, 7:30 to 11 p.m., May 2 in ARA Clubhoues. Music will be provided by the "Chancellors," and each member is permitted one guest. School clothes are appropriate dress.

The "Teen-age Sweetheart" contest is designed to select a queen to reign over Teen Club events throughout the year. Judging will be held at the club's May 16 dance, on the basis of appearance, poise and personality.

Eligible to enter the contest are all Teen Club girls, and those non-members who are nominated by Teen Club boys. All nominees will require parents' permission to participate.

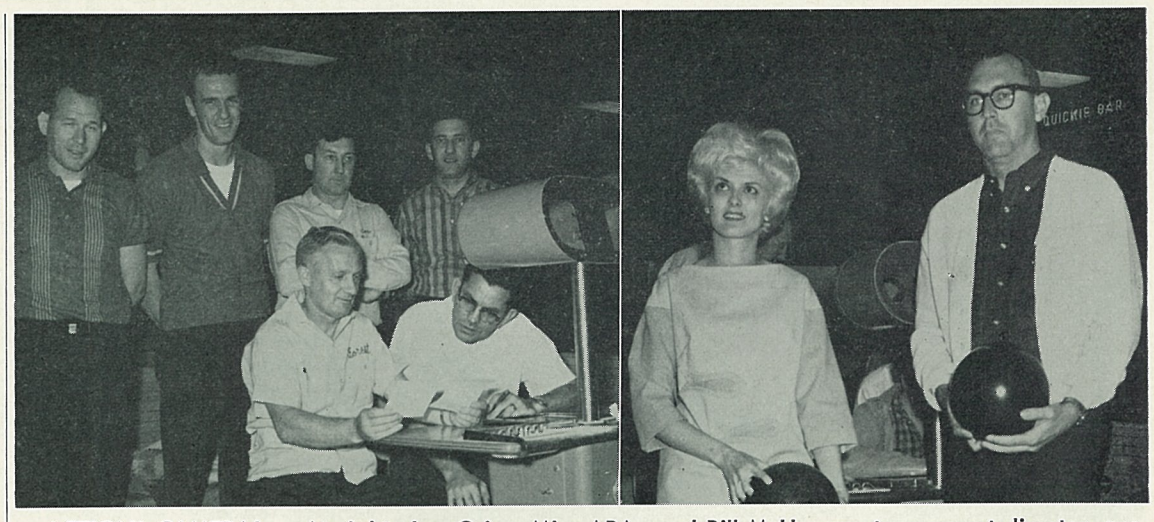
Official entry forms are available from employee services outlets, or from ARA Commissioner John Hess.

Annual Spring Net Tourney Scheduled

Second annual spring tennis tournament will be staged next month at the new Mesa College courts by GD/Astro Management Club Tennis Association with both singles and doubles events scheduled.

A three-classification doubles tourney will be played May 2 and 3, while singles entries in three groups will compete May 9 and 10.

An entry fee of $1 per event will help defray cost of new balls and trophies. Entry deadline is April 28.



ACTION! CAMERA! — At right, Jan Grier, Miss ARA, and Bill McHorney, tournament director, prepare to start annual plantwide bowling tournament. In photo at left, Forest Erwin, seated left, ARA commissioner, and Charles Quinton, team captain, check results posted by "Good Guys," one of 53 teams in championship. Standing are Darrell Stalnaker, Dennis Williams, Joe Violette, Roy Cariola. Team turned in 3,073 series.

Plantwide Bowling Champions Honored at Victory Banquet

Astronautics Recreation Association ran out the red carpet last Sunday (April 19) for its plantwide bowling champions.

Occasion was a dinner-dance at the Quad Room, Clairemont Bowl, for those who won trophies during ARA's sixth annual plantwide championship tournament April 4-5, 11-12 at Clairemont.

This year the men's events drew 53 teams, 210 singles, 95 doubles and 158 all-events entries. Women's events attracted 35 singles and 12 all-events entries. Mixed competition found 22 teams and 33 doubles combinations taking part.

Harry Lund paced the men's singles with a 741-pin total, followed in order by Charles Pellicano (716), Joe McCafferty (715), Don Falls (694) and John Huddleston (689).

Elaine Nordberg bested the women's singles crowd with a 642 total. Trailing were Sharrie Macomber (635), Billie Lee (625), Mary Speth (622) and Linda Robinson (621).

Douglas Webb and John Cook shot a 1,319-pin total for men's doubles honors with Donald Monroe-Phil Coburn (1,316), and Burt Lee-Tony Zulla (1,315) just behind. Dee Nunnelly and Jeff Ollila put together a 1,296-pin total for mixed doubles honors. Sharrie Macomber-Bill Neal (1,256) and Ann Heist-Hal Heist (1,255) were close behind.

The Good Guys captained by Charles Quinton copped men's team honors with 3,073. Team members were Darrell Stalnaker, Dennis Williams, Joe Violette and Roy Cariola. The Shrikes were second with 3,049 with the Outsiders third with 3,020.

The Lo Balls led by Marion Hess took mixed team laurels, posting a 3,018-pin total. Betty Hess, Charles and Margaret Rekalske and Bill Mountain rounded out the team. The Late Comers were second with 3,012 and the Astro Five third with 3,010.

Final tabulations in all-events were not complete at presstime.

Teams or individuals with cash pay-offs coming may call at employee services, Bldg. 8, Plant 71, during normal sales hours (11 a.m. to 1 p.m.; 4 to 5 p.m.) to pick up their prizes. Pay-offs begin April 20. Information may be obtained from ARA office, ext. 1111.

ARA Sculpture Club Activity Picks Up

ARA Sculpture Club is in full swing, with sessions each Monday, 7:30 to 10 p.m. in the new art room of ARA Clubhouse.

At present, participants are working in clay (available at cost through the club), with beginners receiving basic instruction, and advanced students working from replicas of masterpieces. All are exploring the many mediums and methods of sculpturing.

A limited number of additional members can be accepted. More information is available from Francis A. Pall, Plant 19, ext. 1386.

Astro Hoopsters Yield Title to Pomona Club

ARA's Astro "A" team finished second in the Southern California Municipal Athletic Federation basketball tourney last month, but they yielded the title by a slim margin and kept the championship "in the family."

Astro was edged 91-92 by the Maulers of GD/Pomona.

In San Diego city league play, Astro had won the local pre-season tourney, and ended the season in second place, one game behind Calewo.

In the recent tourney, Astro worked its way to the finals through a bye, and victories over teams from Lancaster (66-59) and Long Beach (109-83).

Percy Gilbert led scoring against Pomona with 46 points. Also seeing action were Jim Doherty and Ed Cane, forwards; Ernest McCray, center; Arch Rambeau, guard, and Dick Mattox. Astro coach is Hank Fuller.

Course to Start In Cake Decorating

Another of the popular ARA-sponsored courses in cake and gelatin decorating will open April 21 with a 9 to 11 a.m. session in ARA Clubhouse.

The class is the fifth of its kind, and some 700 Astro wives and dependents have completed previous courses.

Classes will meet each Tuesday for 10 to 12 consecutive weeks, with Gil Hutter, manager of Prophet Co. cafeteria at GD/Astro, as instructor. There is no charge for instruction, although participants will be asked to supply their own materials.

Demonstrations will include cake icing, cutting, decorating, making sugar molds, cookie and pie making.

ARA Is Accepting Keg League Entries

Entry forms for ARA-sponsored summer bowling leagues are now available at all employee services outlets and bowling establishments.

Leagues will get under way about mid-May at Clairemont, Parkway, Mission Valley Bowlero, Frontier and La Mesa.

Forms request individuals and teams to state their preferences as to leagues and nights. Plans call for mixed and men's loops, both scratch and handicap. Final establishment of leagues will depend on interest.

SCHINDLER SHINES IN PISTOL SHOOTS

Al Schindler doubled his honors in recent ARA Pistol Club matches by winning both master class in a .22 Police Course round, and a .22 Short National.

In the Police event, Schindler scored a 295 of a possible 300 points, and was trailed in master class by Roland Schneider with 291.

Angrim Carlson led John Bennett, 280-278 in expert class, and Bill Worthington fired 264 to top J. D. Powell's 253 in the sharpshooter bracket. Among the marksmen, F. A. Lewis led J. T. Crane, 242-241.

Trailing Schindler's 291 in the Short National round were Warren Ranscht with 286, J. S. Knutson with 285, and Roland Schneider, 283.

Mission Bay Scene For Golf Lessons

A series of golf lessons for men opens May 5 at Mission Bay Golf Course under sponsorship of ARA.

Price for the 10 lessons (one hour per week) will be $10. Sessions will be held from 8 to 9 p.m. each Tuesday. Reservations are being accepted at all employee services outlets with deadline for entering April 24.

MASTER TOUCH—Gil Hutter, center, Prophet Co. cafeteria manager at GD/Astro, demonstrates art of gelatin decorating to Violet Sunde, left, and Mrs. Georgia Hatfield, right, new president of Astro Wives' Club. Hutter will instruct class in pastry and decorative arts opening April 21, 9 a.m., in ARA Clubhouse.

DEVASTATED — Buildings twisted off their foundations at Seward, Alaska, are surrounded by wreckage of both earthquake and tidal wave. Photograph was taken two days after quake by Strategic Air Command B-58 bombers from 500 feet.

B-58s Speed to Alaska To Photograph Damage

The B-58's added role as Strategic Air Command's global low-level reconnaissance mainstay was dramatically demonstrated last month following the devastating earthquake in Alaska.

The day after the quake two B-58s from the 43rd Bomb Wing at Carswell AFB were dispatched for aerial photography of damaged areas. The mission was planned, cameras loaded, aircraft inspected, all within two hours after a rush call, a SAC release reported.

"High altitude photography would be difficult and spotty," Don Smith wrote in the SAC release. "Anchorage, particularly, was obscured by a layer of clouds at 1,000 feet. Mountains ringed the targets and the overcast made precision navigation a critical factor. The two B-58s made five photo runs at 500 feet under the overcast. Their automatic cameras worked perfectly."

The planes sped to Offutt AFB, Neb., where cameras were unloaded and film processed by the 544th Aerospace Reconnaissance Wing at SAC headquarters. On the flight the B-58s flew a total of 10 hours and 20 minutes, covering a round trip distance of 5,741 miles.

Next day two more B-58s from Carswell flew the entire mission over again, covering all seven targets without a hitch.

After the Cuban crisis underscored the importance of timely reconnaissance, SAC decided "to take advantage of the existing capability of manned bombers to improve ability to take pictures, with short notice, anywhere on the globe."

The B-58 was selected for its speed (up to twice that of sound) and versatility (it can fly "on the deck" or in the stratosphere).

"Its broad, delta wing gives it the best low-level ride of any bomber, an ideal camera platform," Smith wrote. "The external pod carries cameras as easily as fuel or weapons and pods can be changed quickly to convert a bomber to a reconnaissance aircraft."

Crews from the 64th and 65th Bomb Squadrons flew the Alaskan missions. They were: Capt. I. M. Glass, aircraft commander, Lt. Richard Arens, navigator, and Capt. Robert J. Hill, DSO; Maj. John C. Kennon, aircraft commander, Maj. Cosimo Mallozzi, navigator, and Capt. Roger Gerrish, DSO; Maj. Richard D. Snyder, aircraft commander, Capt. Donald E. Winters, navigator, and Lt. Richard L. Labonte, DSO; Lt. Col. Andrew G. Martin, aircraft commander, Maj. Carter N. Brunk, navigator, and Maj. Howard S. Bialas, DSO.

McClure Will Head Panel For Seminar

J. Y. McClure, General Dynamics director of reliability, quality control, value control, will head a top management panel at the fourth annual seminar of the San Diego section, American Society for Quality Control, May 2, at Vacation Village.

More than 400 persons are expected to attend the all-day seminar.

Rear Adm. Jackson D. Arnold, USN, will be principal speaker.

Calif. to Turn Back Clocks This Sunday

General Dynamics people in California will turn their clocks ahead an hour this coming Sunday (April 26) as the state goes on Daylight Saving Time.

Clocks will be set ahead one hour at 2 a.m.

GD employees at all California facilities and off-site bases will report to work an hour earlier (by the sun) the next day, Monday, April 27. The "lost" hour will be regained next fall when the state reverts to standard time.

Army Gives Go Ahead On Redeye Production As Contracts Granted

The U. S. Army has awarded three contracts totaling $17,981,642 to General Dynamics/Pomona for initial production and continued development of its shoulder fired Redeye air defense guided missile.

Two contracts totaling $13,222,358 to initiate production were announced by the Department of Defense April 10.

One contract for $8,240,710 pertains directly to production costs while the other for $4,981,648 provides for engineering services required to start production of the missile.

As is normal in all missile programs, development work is continuing. Award of a $4,759,284 contract to GD/Pomona for continued research and development of the Redeye missile was announced April 7.

Development of the weapon, the world's smallest guided missile, has been jointly funded by the Army and Marine Corps.

Delivery of production line missiles will be made to the U.S. Air Defense Board, Fort Bliss, Texas, where troop testing will be conducted.

Designed to be carried into combat on a soldier's back and fired from his shoulder, the Redeye got its name from the infrared heat seeking device it employs to "home" on the heat of an aircraft's engine.

The missile will give individual infantrymen effective anti-aircraft defense against low-flying enemy aircraft. It can be taken anywhere a soldier can carry a rifle.

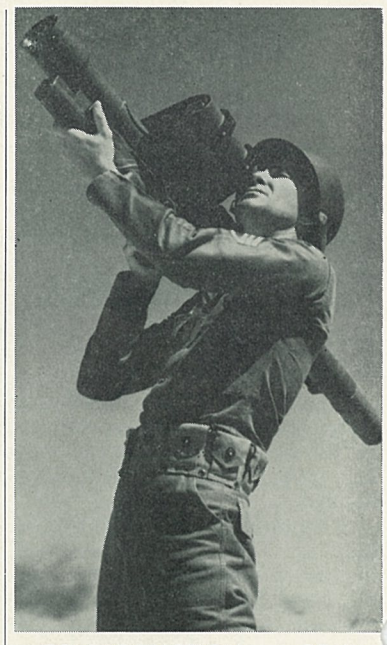
Redeye is similar in appearance to the Army's famed bazooka anti-tank rocket. But unlike the bazooka, which fires an unguided rocket, Redeye is a true guided missile which can maneuver in flight.

The infrared sensor is mounted in the nose of the four-foot solid propelled missile. It is fin stabilized and aerodynamically controlled in flight.

Target detection and tracking is accomplished visually by the gunner. When the aircraft is within range of the missile and the infrared seeker has "locked on" the target, a simple squeeze of the trigger fires the missile.

Soldiers firing the missile in tests have scored hits after only a few hours of instruction.

The U. S. Army Missile Command at Redstone Arsenal, Ala., an element of the Army Missile Command, manages the weapon system for both the Army and the Marine Corps. E. K. Charlton is acting project manager. Lt. Col. Henry L. Claterbos is development officer.



TO PRODUCTION — GD/Pomona has been awarded contracts to initiate Redeye production. Staff Sgt. Rufus Parker is shown tracking airborne target with air defense guided missile. Redeye is development of U.S. Army Missile Command.

First Customers Place Orders For Self-Instruction Books

First orders for GD/Convair's latest series of programmed instruction textbooks, compiled by technical publications department, arrived within days of first announcement.

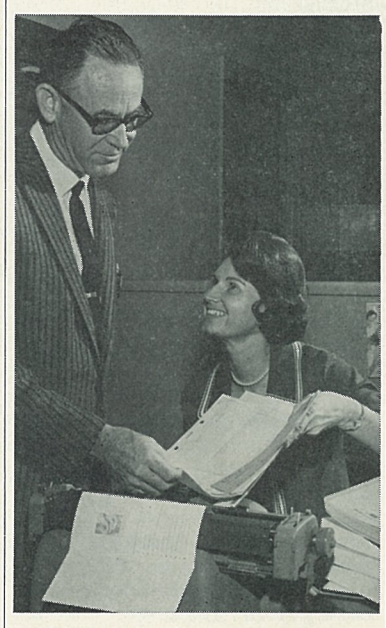
The new self-instruction books are for training and certifying nondestructive testing technicians. The first three of six now ready for the industrial market are: Introduction, Liquid Penetrant Inspection, and Magnetic Particle Inspection. Current scheduling calls for publication of the other three to complete the series—Radiographic Inspection, Ultrasonic Inspection, and Eddy Current Inspection—within the next year.

Howard R. Kennedy, Convair chief of technical publications, said that he was more than gratified by the early response to 900 brochures sent out the first of the month. Within the first three days orders (and checks) had come back from such companies as Industrial Steel Treating Co., Industrial X-Ray Engineers, Langley Corp., Magnetic Inspection Research Co., American Brakeshoe Co., Photo Chemical Products, Zarkin Machine Co., Irrigation Equipment, Larpen Industries, X-Ray Products Corp., Ferro-Spec Labs, Calumet & Hecla, Inc., Olin-Dixon, Inc.

The books, which took 10 months to compile, were authorized by General Dynamics Corporate Office and prepared under technical direction of the GD nondestructive testing working committee. This committee, made up of representatives from all GD divisions, was established to standardize nondestructive testing procedures and to exchange related information within General Dynamics.

Before final approval, drafts of the books were tested extensively and revised several times to make certain that they will effectively teach the material and reduce the amount of time now required to train technicians in liquid penetrant and magnetic particle inspection methods. They were tried out at GD divisions of Electric Boat, Fort Worth, Astronautics, and at the San Diego Naval Repair Facility with excellent results, said Kennedy. Test grades for all the books averaged above 90 per cent in final trials.

A sampling of comments from first users discloses that: "more material is being taught in less time and test grades have been higher than with conventional training methods" . . . "40 per cent less time was used in training a group of magnetic particle test technicians" . . . "students are getting significantly higher test grades on the written examination although the examination furnished with the programmed books is longer and more difficult than the one ordinarily used."



CASH SALES — Secretary Hazel Ferguson shows boss H. R. Kennedy, Convair's chief of technical publications, first orders for new series of programmed, self-instruction textbooks on nondestructive testing.

Cost Reduction Techniques Discussed at Joint Meeting

Cost reduction was the major theme April 8-9 when 16 key procurement executives from throughout General Dynamics operations gathered in San Diego for a procurement meeting.

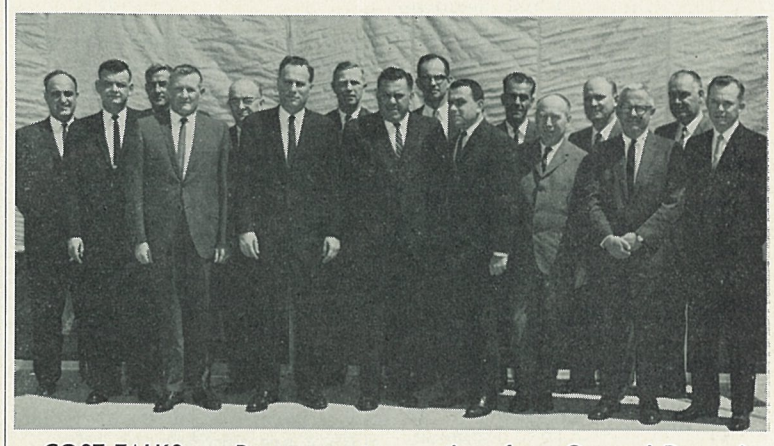
Heading the delegates was Max Golden, Corporate vice president, and three other Corporate representatives. Nine divisions and Canadair sent ranking purchasing and material leaders.

Special emphasis was applied to General Dynamics action taken or to be taken in response to recent Department of Defense and National Aeronautics and Space Administration requests for added attention to the reduction of costs in government contracts. Discussions covered every aspect of cost reduction in purchasing operations.

Special reports were made on specific topics with general discussions, exchange of information, techniques and ideas following. Several sessions dealt with advanced products.

Corporate participants, in addition to Golden, were J. M. Cowell, C. M. Barlow and Bob Wohl. Astronautics was represented by H. E. Moose and W. G. Evans, while General Atomic sent C. J. Brous and J. E. Eggleston. Others, with their division in parentheses, were: G. W. Zahrte (Convair), E. E. Altimas (Canadair), D. H. Painter (Electric Boat), J. B. McKinnon (Electronics-Rochester), L. A. Wood (Electronics-San Diego), C. A. Ford (Fort Worth), A. Toy (Pomona), and R. C. Stevens (Stromberg-Carlson).

Astronautics, Convair and Electronics-San Diego hosted.



COST TALKS — Procurement executives from General Dynamics divisions met this month in San Diego. From left: C. J. Brous (General Atomic), D. H. Painter (Electric Boat), C. M. Barlow (Corp. Office), H. E. Moose (GD/Astro), W. G. Evans (GD/Astro), Max Golden, Corporate vice president, J. B. McKinnon (GD/E-Roch.), J. M. Cowell (Corp. Office), R. C. Stevens (Stromberg-Carlson), Robert Wohl (Corp. Office), A. Toy (GD/Pomona), E. E. Altimas (Canadair), G. W. Zahrte (Convair), J. E. Eggleston (General Atomic), L. A. Wood (GD/E-SD), C. A. Ford (GD/Fort Worth).

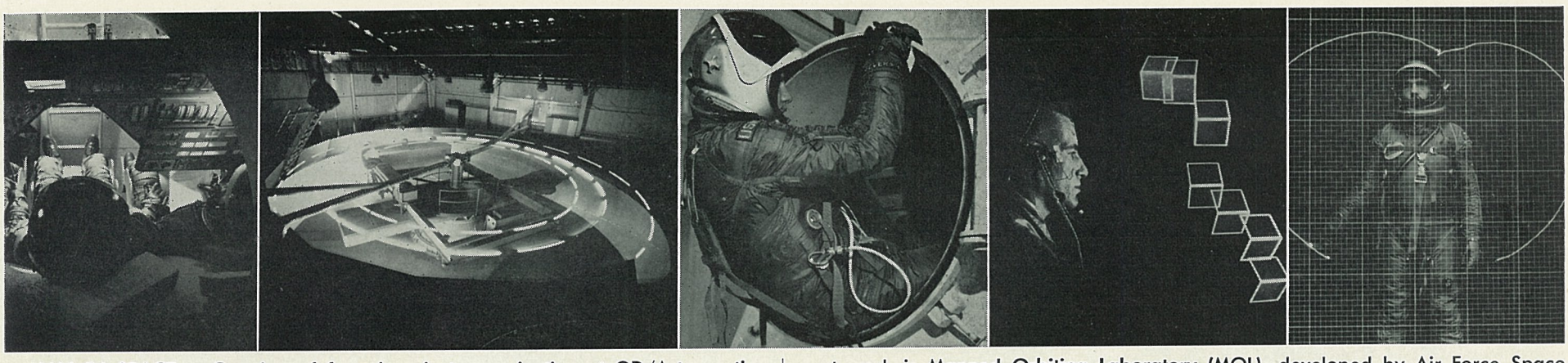
Key Division Value Personnel To Confer on Coast Next Week

Key value engineering and cost reduction personnel from 11 General Dynamics divisions are expected to attend the third General Dynamics Value Control Seminar next week (April 27-28) in San Diego.

J. Y. McClure, Corporate director of reliability, quality control, and value control, will chair the two-day conference. He said that purpose of the meeting is "to provide information on Corporate policy to division value control administrators; to secure cross-fertilization through the interchange; and to secure maximum effectiveness of our value control programs for the divisions and our customers."

Some of the subjects to be covered are: Corporate viewpoint with regard to division value control programs; distinction between value control and other division cost reduction programs; methods for establishment of value control goals and optimum levels of efforts; analysis of value engineering/value control effectiveness for incentive type contracts and direct funding type contracts; uniform methods of reporting value control savings to customers and Corporate headquarters; a review of divisional value control plans and goals.

Delegates will be sent by Canadair Limited, Convair, Astronautics, Pomona, Fort Worth, General Atomic, Electronics-San Diego, Electronics-Rochester, Stromberg-Carlson, Electric Boat, Electro Dynamic.



MAN IN SPACE — Creation of formal project organization at GD/Astronautics to deal exclusively with manned space systems is major step in division's continuing work in area. It will provide further impetus and direction to studies such as those pictured above, already under way for more than five years. Prime target of current work is Manned Orbiting Laboratory (MOL), developed by Air Force Space Systems Division, which will orbit spacecraft of house-trailer size, accommodating two-man crew for periods of up to 30 days while they conduct scientific experiments in space.

GD

ASTRONAUTICS EDITION

GENERAL DYNAMICS NEWS

Vol. 17, No. 10 — PUBLISHED BY GENERAL DYNAMICS CORPORATION — Wednesday, May 6, 1964

Club to Hear USAF General

Brig. Gen. Joseph S. Bleymaier, USAF, will be guest speaker at the meeting of GD/Astro Management Club May 20 in the International Room, El Cortez Hotel.

Gen. Bleymaier

Gen. Bleymaier is Deputy Commander for Manned Systems, Air Force Space Systems Division. He will discuss "Systems Management Philosophy."

GD/Astro controller's department, headed by Erle Hill, controller, is sponsoring the meeting. Tickets at $3 are available from club "Boosters" throughout the division's San Diego facilities. A social hour at 5:30 p.m. will precede dinner at 6:30.

As Deputy Commander for Manned Systems, Gen. Bleymaier manages the overall field level manned space program, including all aspects of the recently announced Manned Orbiting Laboratory (MOL). Additionally, he serves as deputy to Maj. Gen. Ben I. Funk, Space Systems Division commander.

A veteran of 25 combat missions during World War II, the general was assigned to missile and space research and development work in 1954, and in 1958 joined the Air Force Ballistic Missile Division. In 1961 he was named Deputy for Launch Vehicles, Space Systems Division.

His responsibilities in the MOL program include the spacecraft and Gemini personnel carrier elements, plus development of the components and their integration into the complete MOL systems.

Sales Increase, Lewis Reports

Sales, pre-tax profits and net profits of General Dynamics Corporation for the first quarter of 1964 were all up over the comparable quarter of the year before, Roger Lewis, president, told the annual stock holders meeting last month.

Sales for the first quarter of 1964 amounted to $377-million, an 8 per cent increase over the first quarter of last year.

Profit before taxes for the latest period amounted to $14.1-million compared with $8.8-million in the first quarter of the year before. Consolidated net income for the three months ending March 31, 1964, Lewis said, was $7,290,000, equivalent to 61 cents per common share after provision for preferred dividends equivalent to 12 cents per common share.

Lewis noted that no provision for Federal income tax had been required in the year-before period due to the losses carried forward from 1961 but that currently the company is providing for income taxes on all its earnings. Therefore, the reported earnings for the first quarter of 1963 have been restated for comparison purposes with those of the latest period to include provision for income taxes in both periods.

Lewis emphasized that the 61 cents per common share for this year's first quarter was after provision for preferred dividends while the restated 49 cents for the first quarter of 1963 required no provision for preferred dividends.

Due to the improved financial

(Continued on Page 2)

ESs Paying Off At $65 Average

Nearly one of every four GD/Astronautics employees currently submits an Employee Suggestion (ES) or Cost Improvement Proposal (CIP) each week, according to suggestion review and evaluation section, management systems (Dept. 170-1).

At the end of April, weekly submission rate stood at 23.4 per 100 employees, up from 10.9 at beginning of the year. Of these submitted, 15.9 per cent are approved!

So far this year, ES/CIPs have accounted for net savings of $149,048, and hourly employees submitting approved ESs have received an average of $65.20 for their cost reduction ideas.

Typical of "suggesters" and their ideas is John Kernoski, Dept. 452, who recently received a total of $895 for suggesting a holding fixture for use in honing cylinders. The fixture reduced an

(Continued on Page 2)

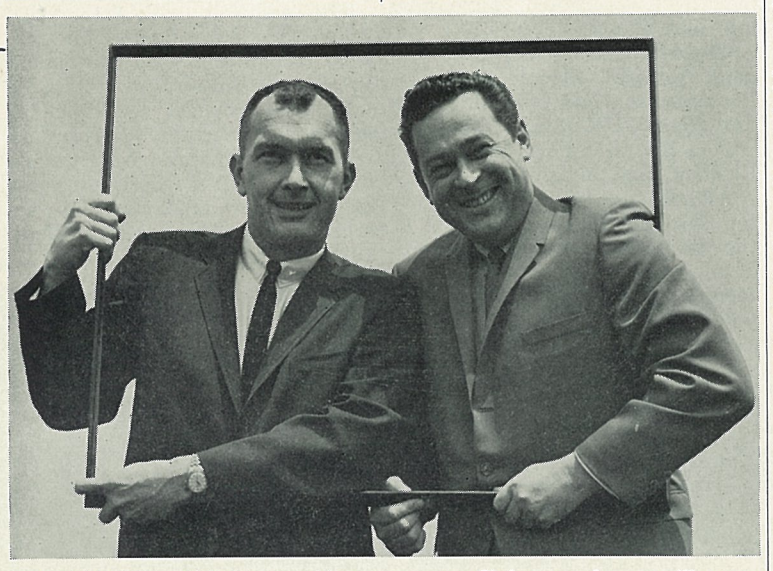
Camp and Slingsby Bid For Club Ballots As Race For Presidency Nears Climax

Astronautics Management Club members vote this week for a slate of officers for the coming year. Results will be revealed at the May meeting with installation set for June.

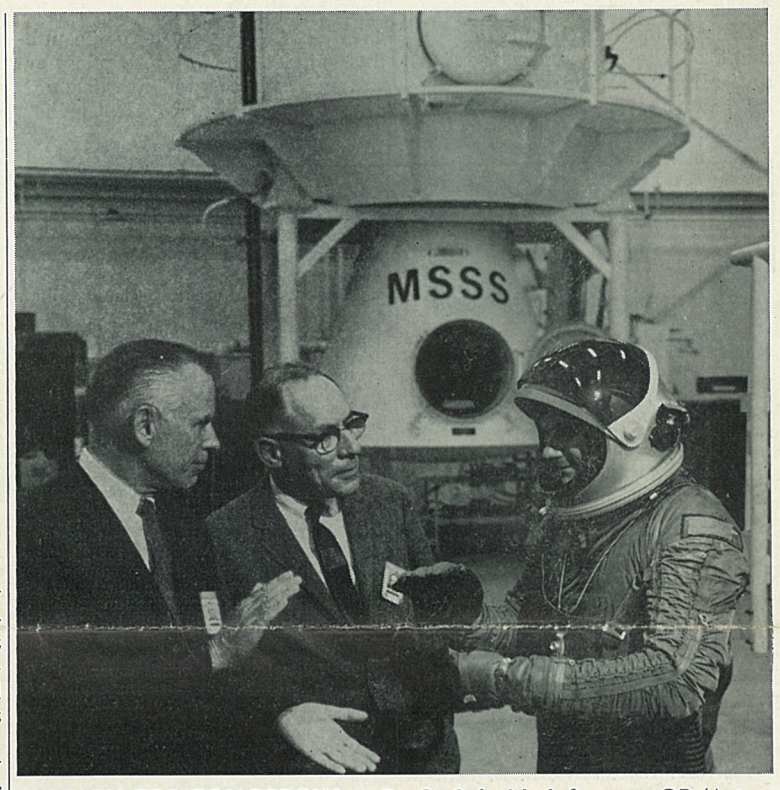
R. G. "Dick" Camp and Don K. Slingsby, presidential aspirants, head a slate of 22 seeking office.

J. R. King and C. C. Dragila are candidates for first vice president, While J. S. Duffy and A. J. Gillette Jr. vie for second vice president. George Di Matteo and J. L. Mumford seek the post of recording secretary. Financial secretary candidates are A. H. Hausrath and J. F. Baebler. A. R. Mosco and G. J. Gonlag are running for treasurer.

Two board of control members to fill three-year terms will be selected from a field of J. E. Lieb, R. T. Blair and W. J. Cushman. One two-year post is being sought by D. P. Wright Jr., P. S. Bazler and N. D. Baird. There are two vacant one-year board posts to be filled from a field including E. S. Franklin, R. C. Emerson, P. R. Green and B. A. Mendoza.



FRAMED? — GD/Astro Management Club members will vote this month to decide whether Don K. Slingsby, left, or R. G. "Dick" Camp gets "into the picture" as club president. Twenty-two candidates have been nominated for club office and board of control posts.



READY FOR TOMORROW — R. C. Sebold, left, new GD/Astronautics vice president-research, development and engineering, and Mort Rosenbaum, newly appointed vice president and program director-manned space systems, "talk space" with Dick Wolf, spacesuited for tests in Manned Static Space Simulator, in background.

Rosenbaum to Head Manned Space Effort; Sebold Joins Astro

Creation of a new GD/Astronautics project organization to concentrate exclusively on manned space systems was publicly announced last week by President J. R. Dempsey.

Emphasis placed upon the new organization is evidenced in the appointment of Mort Rosenbaum as vice president and program director to head the project.

Of Rosenbaum's assignment, Dempsey said, "His career combines the two elements most vital to these systems: long experience with both manned and unmanned systems, and a record of success in managing large and complex technical developments."

To fill Rosenbaum's previous post, R. C. "Sparky" Sebold, long-time General Dynamics executive, has joined GD/Astro as vice president — research, development and engineering.

Work in the field of manned spacecraft has been under way at GD/Astro for more than five years, and two existing division functions — life sciences laboratory headed by Dr. R. C. Armstrong (MD), and the space station activity directed by P. E. Culbertson — were assigned immediately to the manned space systems project.

In life sciences, specialists in both physical and life sciences

(Continued on Page 2)

★ ★ ★

Rosenbaum Gets Key Space Role

Mort Rosenbaum is a veteran of over 25 years with GD/Astronautics and its predecessor organizations, and was first associated with the Atlas program in 1952 as project engineer.

Later, he guided Atlas engineering development from the early test models through operational deployment of D, E and F series, and directed engineer-

(Continued on Page 2)

★ ★ ★

Sebold Veteran Eng. Executive

R. C. "Sparky" Sebold, GD/Astro's new vice president—research, development and engineering, returns to an executive General Dynamics post following two years' service as consultant to Robert Gilruth, director of NASA's Manned Spacecraft Center, Houston, Texas.

A veteran of 35 years in research and development on man-

(Continued on Page 2)

Sales Increase Over 1963, Reported by Roger Lewis

(Continued from Page 1)
picture of the company, restrictions previously included in long term debt agreements, which prohibited payments of dividends on any class of stock, have been removed and reasonable dividend payments are now permitted.

Lewis added that the directors and management of General Dynamics hope to resume dividend payments "just as soon as they are assured that the improvement in the company's overall financial structure and earnings projections for the future so warrant."

However, Lewis added, he could not at this stage make any statement as to when this action could be taken.

Among major new programs, Lewis said, the development of the F-111 variable sweep wing bi-service tactical fighter is on schedule and the company expects to deliver—within the contract dates — an airplane which meets or exceeds the requirements of the Department of Defense in all significant respects.

He also noted that the development of the Redeye man-carried anti-aircraft missile has proceeded to the point where the company has received contracts to prepare for quantity production.

The annual meeting of General Dynamics this year was held at New London, Conn., near the company's big nuclear-submarine building division. For the past decade the company had been holding its share owner meetings in Delaware. Lewis said that the current plan is to hold future share owner meetings at other locations where General Dynamics has major operations.

All directors were re-elected.

Organist Featured For Sunday Concert

Both popular and classical selections styled by Organist Richard Smith will be featured at the ARA Organ Club-sponsored concert at 2:30 p.m., May 17 in ARA Clubhouse.

Smith is among Southern California's youngest theater organists, and has appeared on the local "Sundown" TV show.

The concert is open to the public. Donation of 75 cents per person will be accepted at the door, or in advance by Roy Rothacher, ARA commissioner.

Students Competing In GD/Astro Contest

More than 250 of San Diego County's better mathematics students competed over the past weekend (May 2) in the seventh annual Honors Math contest sponsored by GD/Astronautics.

Participants were selected from advanced high school math classes. Competition was in three categories, city, county and independent. The highest scoring team was to receive a $100 cash award and a permanent school trophy.

Rosenbaum Heads MOL Effort As Sebold Joins GD/Astro

(Continued from Page 1)
are studying various aspects which will confront man in space. Their work includes development of a four-man life support system prototype being built under contract to National Aeronautics and Space Administration (NASA).

The group headed by Culbertson has been actively studying orbiting space vehicles, and will spearhead General Dynamics' bid in the up-coming Air Force competition for a manned orbital laboratory (MOL).

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Rosenbaum Gets Key Space Role

(Continued from Page 1)
ing adaptation of Atlas for use as a space launch vehicle for earth satellites and deep space missions.

He was named GD/Astro's chief engineer in 1957, and later served as vice president — research, development and engineering, until named to head the new manned space systems organization.

Rosenbaum is a member of the Guided Missile Systems Committee, American Ordnance Association; a fellow of the American Institute of Aeronautics and Astronautics; and a senior member of the Institute of Radio Engineers.

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Sebold Veteran Eng. Executive

(Continued from Page 1)
ned and unmanned aerospace systems, Sebold joined Consolidated Aircraft Corp. (a GD forerunner) in Buffalo, N. Y., in 1929, and moved with the company to its San Diego headquarters in 1935.

Following service as a project engineer at both the San Diego and Fort Worth divisions, Sebold was named director of engineering for Convair in 1949. He became vice president — engineering, in the same year and retained the post after the Convair-General Dynamics merger in 1954.

For his role in development of the B-36, he was one of three recipients of the Air Force Association's Airpower Award in 1949. He is a fellow of the American Institute of Aeronautics and Astronautics, and a consultant in the office of the Assistant Secretary of Defense for research and development.

IN SESSION — Finalists in Astro Management Club's scholarship program are shown with judges. Judges, from left, back row are Robert F. Smith, Robert Hungate, Dr. Ed Creutz, Dr. Allan Wilson (committee chairman), Eric Herz, Ray Sodomka and Emory Thurston. Finalists, from left, are Robert Franson, Pamela Nichols, Karen Fortin and Keith Campbell. Franson later withdrew to accept General Dynamics National Merit Scholarship. Kathleen Hazer, not shown, was added to list of award winners.

GD/Astro Management Club Will Honor Winning Scholars

Winners of Astronautics Management Club's annual scholarship awards for Astro sons and daughters will be honored May 20 at the club's regular May meeting.

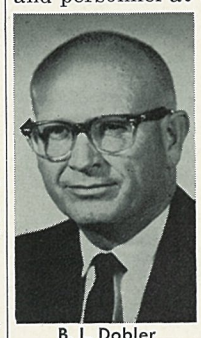
Karen Fortin, daughter of Eugene Fortin (Dept. 210-0) will receive the top award, $800. Sharing equally ($250 each) the combined second and third-place awards will be Keith Campbell, son of Richard Campbell (Dept. 641-0), and Pamela Nichols, daughter of Jack Nichols (Dept. 644-0). Kathleen Hazer, daughter of Ervin Hazer (Dept. 142-2), will receive a $100 award.

(Robert Franson, son of Wilfred Franson (Dept. 140-3), was originally selected to receive the top award. However, he declined in order to accept a General Dynamics National Merit Award. Thus, a new winner was selected and the two middle awards combined.)

Finalists appeared before three outside judges,

Dobler Named To Astro Post

Bruce L. Dobler has been named chief of professional placement and personnel at GD/Astronautics by M. V. Wisdom, director of industrial relations.



B. L. Dobler

Dobler reports to R. A. Evans, manager of personnel administration.

He replaces R. E. Sutherland who has transferred to Electric Boat as manager of personnel administration and compensation.

A native of Iowa and a graduate of Monmouth (Ill.) College, Dobler joined GD/Convair in 1958 and became manager of engineering personnel before shifting to Astro in 1961. He has served Astro as technical recruiting supervisor.

In his new post Dobler will be responsible for recruiting and placement of engineers, scientists and other professional personnel.

Scholarships Go To Eleven

Nine General Dynamics sons and two GD daughters have received General Dynamics Corporation Merit Scholarships for the year 1964, Algie A. Hendrix, General Dynamics vice president-industrial relations, announced late last month.

GD/Astronautics had three winners. General Atomic and GD/Pomona each had two. One each are from GD/Convair, GD/Electronics-SD, GD/Fort Worth and Electric Boat division.

All of the young people are top students and at the head of the list in National Merit Scholarship qualifying tests. They will receive scholarships ranging in amounts from $1,000 to $6,000, spread over their four college years.

Winners are:

Astronautics—Thomas David Crouch, son of Mr. and Mrs. Kenneth L. Crouch; Dean Maynard Sandin, son of Mr. and Mrs. Dean H. Sandin; Robert W. Franson, son of Mr. and Mrs. Wilfred R. Franson.

Convair—Byran C. Cheney, son of Mr. and Mrs. Harold K. Cheney.

Electric Boat—David Carl Erik-

(Continued on Page 6)

ESs Paying Off At $65 Average

(Continued from Page 1)
18 manhour task to five hours, and on a 241-part run saved his department 3,133 hours, or $8,951.

Helen M. Yturralde, Dept. 833, collected $515 for suggesting use of a common shipping document for parts kits being shipped to off-site bases. In its first year of use her idea saved $5,156—1,875 manhours.

As a salaried employee, J. W. Skibo, Dept. 193-0, was not eligible for a cash award, but credit for an approved CIP which saved the company $14,515 has been made a permanent part of his personnel record.

(In addition, GD/Astro CIP submitters are reviewed for possible recognition with the annual President's Award.)

Skibo's proposal recommended deletion of certain unused data from a printed status report while retaining it for record purposes on computer tape. Savings accrued in data processing (Dept. 101).

Reserve Unit Seeks Former Navy Men

Former Navy enlisted men among GD/Astro employees have been invited to investigate possibility of membership in a Select Reserve crew in the Navy's anti-submarine warfare program.

GD/Astro's L. E. Bolt (LCdr.), Dept. 581-4, ext. 3604, is commanding officer, and M. R. Knuth, (LCdr.) Dept. 954-4, ext. 2786, is section officer-in-charge, USS Wiseman (DDE-667). Either will welcome inquiries.

Field Editor to Talk On Technical Books

Jack T. Feyock, field editor for McGraw-Hill's Industrial and Business Book division, will lead a discussion on "Writing a Technical Book" Monday (May 11) at Astronautics.

Set for 5 p.m. in the presentation room, second floor, Bldg. 2, the discussion will be open to all Astro employees up to a 100-person room capacity. Sponsoring are Astro's technical library and education services. There is no charge.

Log Book Entries

Service Emblems

Service emblems due during the period May 1 through May 15.

Twenty-five-year: Dept. 520-0 P. D. Ferrara.

Twenty-year: Dept. 151-0, C. L. Smith; Dept. 374-1, R. T. Pollock; Dept. 972-0, H. L. E. Shaulis.

Fifteen-year: Dept. 143-2, J. H. Brewer; Dept. 344, Dorothy V. Corrao, E. H. Vossen; Dept. 715-0, Elena M. C. DeBaca.

Ten-year: Dept. 35-4, B. A. Smith; Dept. 110-0, H. F. Spuehler; Dept. 146-1, Oscar Fortis; Dept. 316-0, R. D. Sikes; Dept. 360-2, J. R. Robinson; Dept. 369-4, F. V. Shivley Jr.; Dept. 373-7, J. E. Arena; Dept. 424-3, W. A. Gall Jr.; Dept. 454-0, B. J. Summit, J. T. Treat; Dept. 522-5, E. V. Mansfield; Dept. 661, H. C. Lethgo, F. J. L'Herueux; Dept. 832-1, Lois L. Fekke; Dept. 833-1, R. L. Eastberg; Dept. 840-0, Mildred C. Simpson; Dept. 844-0, Barbara R. Pitcock; Dept. 953-1, Donna Thompson; Dept. 966-4, H. J. Hogan.

ALTUS AFB

Ten-year: Dept. 391-3, L. B. LeGrant Jr., W. A. Sepe.

DYESS AFB

Fifteen-year: Dept. 392-2, B. J. Miller.

FAIRCHILD AFB

Fifteen-year: Dept. 388-3, Lawson Spurgeon.

LINCOLN AFB

Ten-year: Dept. 389-3, D. W. Weaver.

SYCAMORE

Ten-year: Dept. 976, J. C. Hayen Jr., W. E. McLeod.

Papers Presented

ASTRONAUTICS

BOYNTON—F. P., Dept. 596-0, "Mechanisms of rocket plume infrared emission at very great altitudes," Anti-Missile Research Advisory Council (AMRAC), Monterey, Calif., April 27-29.

CLOUGH—L. G., Dept. 549-9. "Harmonic generator design," Seminar on Advanced Field Theory, San Diego State College, April 28.

DRAKE—G. L., Dept. 594-7. "Mechanics of waste collection and processes," NASA/National Academy of Sciences Conference, Tampa, Fla., April 27-30.

GILVARRY—J. J., Dept. 596-0. "Effects of loss of lunar mass by meteoritic impact," American Physical Society, Washington, D.C., April 27-30.

GROSSAINT—G. A., Dept. 400-0. "Application of managerial skills and techniques in the manufacturing organization," American Management Association, San Francisco.

HARSHBARGER — F., Dept. 596-0. "Spectral radiance at the nozzle exit . . .," AMRAC, Monterey, Calif., April 27-29.

KING—C.D., Dept. 594-7. "Over-all energy management as related to energy and waste," NASA/National Academy of Sciences Conference, Tampa, Fla., April 27-30.

MATSUMOTO—T., Dept. 549-9. "Tunnel diodes at microwave frequencies," Seminar on Advanced Field Theory, San Diego State College, April 28.

SULZMANN—K. G. P., Dept. 596-0. "Induction period preceding CO_2 formation in shock heated CO-O_2-Ar mixture," USARO Symposium on Chemical Reactions in Shock Tubes, Duke Univ., April 20-22.

WILSON—A. N., Dept. 591-4. Panelist: "Hybrid systems," American Federation of Information Processing Societies, Washington, D.C., April 21-23.

WITTE—B. F. W., Dept. 158-2. "Two new minimum search procedures for functions of several variables," American Federation of Information Processing Societies, Washington, D.C., April 21-23.

* * *

The following presented papers at the SAE, ASME, NASA Meeting and Production Forum, New York City, April 27-May 1:

BURNS—G. A., with C. J. MEIER-BACHTOL, both Dept. 549-9, "Propellant gaging utilizing radio frequency techniques."

CATLIN—Kenneth, Dept. 662-9. "A propellant depletion (engine shutdown) system for the Atlas fuel tank."

KREISLER—R. I., Dept. 654-2. "Tanking the Atlas missile."

PERKINS—C. K., Dept. 532-1. "Capacitance mass sensing of boiling liquids."

PERKINS—C. K., with F. G. RIVINIUS and G. B. WOOD, all Dept. 532-1. "Stillwells for propellant gaging."

SEGAL—Andrew, Dept. 651-2. "Automatic and manual checkout of the Atlas launch vehicle pneumatic system."

Births

SANDIFORD—Son, Timothy Neil, 8 lbs., 1 oz., born March 25 to Mr. and Mrs. J. E. Sandiford, Dept. 344-2.

Deaths

HARMON—Robert H., Dept. 250-2. Died April 15. Survived by sons, Lee A. and John C. Harmon.

MARZOLF—Irene, Dept. 831-1. Died April 28. Survived by sister, two brothers.

Retirements

ALLEN—H. C., Dept. 451-0. Seniority date May 14, 1951. Retired May 1, 1964.

KOVAR—E. J., Dept. 756-0. Seniority date, July 30, 1956. Retired April 1.

MOORE—Alonzo, Dept. 975-3. Seniority date, July 21, 1958. Retired April 1,

Lost & Found

LOST — Gold-filled Scheaffer's pencil at April 10 Management Club meeting, El Cortez Hotel. Engraved with owner's name. Please return to P. A. Carlson, Dept. 381-10, Plant 19.

General Dynamics NEWS

Published by General Dynamics Corporation, One Rockefeller Plaza, New York 20, N. Y.; with editorial headquarters at 3302 Pacific Highway, San Diego 12, Calif., P.O. Box 1950, telephone 296-6611, ext. 1071. Logan Jenkins, editor-in-chief.

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Fort Worth Editorial Offices, between Cols. 71-C and 71-D, Assbly. Bldg., GD/Fort Worth, Mail Zone T-63, P.O. Box 748, Fort Worth 1, Texas. Telephone PErshing 2-4811, ext. 2961. Staff: Dave Lewis, editor; Mary Beck.

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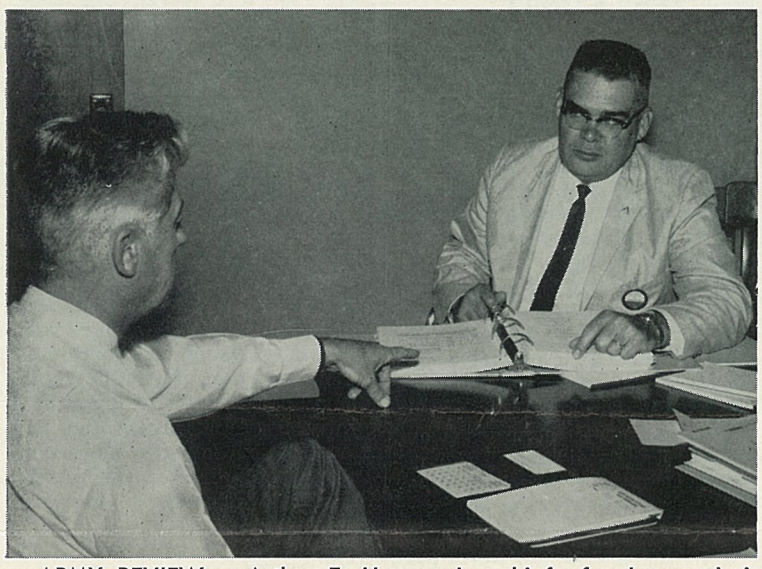
* * *

Affiliated editions of General Dynamics NEWS are published in Rochester, N. Y., covering GD/Electronics and Stromberg-Carlson, editorial offices, 100 Carlson Road, HUbbard 2-2200, ext. 2555. Fred E. Voss, editor; and at Groton, Conn., covering GD/Electric Boat, editorial offices at Groton, HIlltop 5-4321, ext. 300 and 513, Joseph Tracey, editor.

DISTINGUISHED VISITOR — Pictured during tour of GD/Astronautics facilities last month is George E. Fouch, Deputy Assistant Secretary of Defense, second from left. Acting as hosts during factory tour are E. D. Heller, Astro manager of cost reduction and value control, left; E. D. Bryant, Astro vice president - operations, second from right; and J. P. Hopman, Astro factory manager.



ARMY REVIEW — Arthur E. Harvey Jr., chief of value analysis for Army Missile Command at Redstone Arsenal, Ala., visited GD/Pomona last month to review value engineering plans for Redeye industrial program. At left is C. C. Frankenberger of GD/Pomona's Redeye program management office (Dept. 15).

Two Score More Join Growing Ranks Of Value Engineering Seminar Grads

Forty more GD/Astronautics employees last month joined the ranks of value engineering seminar graduates as the division's fourth two-week training program of the year drew to a close.

Formed into five-man teams, each directed by an experienced project leader, seminar participants were indoctrinated in fundamentals of VE techniques; then they applied these to projects submitted by GD/Astro departments.

In this seminar, a team for the first time tackled an administrative project—in this case, the "Make or Buy Authorization."

Successful application of VE to "software" as well as hardware was demonstrated in information presentations of seminar projects to management at the concluding session, when all teams submitted value improvement suggestions.

Seminar instructor was Everett Lindem of educational services (Dept. 130-3), assisted by Hal Sicard, also of the training group.

Team #1. Fuel tank diffusor dome (submitted by SLV). C. H. Kelley, Dept. 665-1; D. E. Evanson, Dept. 403-3; W. R. Hall, Dept. 860-0; J. J. Heilman, Dept. 032-2; M. D. Wolfe, Dept. 731-0. Project leader, J. W. Grochowski, Dept. 561-3.

Team #2. Harness tray (submitted by engineering). R. F. Nelson, Dept. 588-1; C. L. Hinton, Dept. 403-3; L. A. Milton, Dept. 146-0; D. Oliver, Dept. 662-8; B. L. Warren, Dept. 987-3. Project leader, Grochowski.

Team #3. Brake assy. dampener, LOX (submitted by operations). R. C. Huyett, Dept. 581-4; H. R. MacDonald, Dept. 528-2; R. Newman, Dept. 462-0; M. J. Seebach, Dept. 145-2; D. E. Simth, Dept. 835-3. Project leader, Alex Rohr, Dept. 403-3.

Team #4. Make or buy authorization (submitted by operations). E. P. Aquilera, Dept. 528-3; W. I. Hodge, Dept. 250-2; J. J. Janzen, Dept. 373-9; T. L. Lamoureux, Dept. 142-4; M. P. Trego, Dept. 588-3. Project leader, Rohr.

Team #5. LOX topping elbow (submitted by operations). C. D. Flowers, Dept. 403-3; D. J. Gallagher, Dept. 831-0; H. E. LaNois, Dept. 662-7; R. T. Mulroy, Dept. 404-1; P. H. Schaaf, Dept. 558-5. Project leader, J. C. Lievens, Dept. 373-3.

Team #6. C-band antenna assy. (submitted by operations). G. P. Nichols, Dept. 380-6; F. Budz, Dept. 780-3; R. P. Dodds, Dept. 557-3; J. X. Mulvey, Dept. 582-4; R. Garriott, Dept. 549-9. Project leader, Lievens.

Team #7. B-1 cableway covers (submitted by AWS). L. Duncan, Dept. 549-9; Lea Heyob, Dept. 403-3; J. D. Powell, Dept. 375-3; D. C. Remsnyder, Dept. 582-5; J. J. Strachen, Dept. 581-1. Project leader, H. T. Sicard, Dept. 130-3.

Team #8. Oxidizer start tank vent fitting (submitted by operations). A. J. Gunther, Dept. 813-0; A. R. Jensen, Dept. 662-3; R. E. Mannion, Dept. 503-0; E. W. McPherson, Dept. 758-0; D. L. Swingle, Dept. 373-7. Project leader, Sicard.

DOD'S FOUCH URGES 'URGENT ATTITUDE' TOWARD VALUE ENG.

An analysis of Defense Department attitudes toward value engineering and a challenge to exploit VE techniques to their fullest potentials was presented to GD/Astronautics management at President J. R. Dempsey's monthly meeting for supervision April 22.

Speaker was George E. Fouch, Deputy Assistant Secretary of Defense, who addressed the meeting at the conclusion of a one-day visit and tour of GD/Astro facilities.

Fouch explained that the DOD commitment to VE was aimed directly at "more defense for fewer tax dollars."

Far from being a threat, he said, this policy can aid industry, since a good VE program, intelligently applied, can (1) increase profit, (2) strengthen a company's competitive position, and (3) provide a solid means of documenting profits which result from extra management effort.

Fouch explained that value engineering is not for hardware alone—that "software" too, can profit from its techniques. Nor, he said, is it a "second look" program, but rather one which must be diligently applied in all stages of a project.

Fouch cautioned that reliability and maintainability so essential to combat readiness of any weapon system cannot be overlooked as value engineering "fringe benefits."

In fiscal year 1963, he said, DOD has realized savings of $18 million per quarter from VE!

DOD intends to refine and expand the program, he said, and industry will be encouraged to adopt an attitude of urgency toward VE.

In a concluding challenge to his audience, Fouch termed value engineering a management technique which must be thoroughly understood, accepted and used to be fully effective.

He urged that it be free of special interest; that management be prepared to render prompt decisions on VE proposals.

FORTY MORE — Graduates of GD/Astro Value Engineering Seminar 4-64, pictured here, made project presentations to management and received completion certificates April 24. Training program is expected to graduate 40 employees per month throughout year.

TOP LEVEL VE TALK—General Dynamics value engineering and cost reduction leaders gather at GD/Convair plant, San Diego, Calif., for third GD Value Control Seminar last week, April 27-28. Addressing group is Chairman J. Y. McClure, director reliability, quality control, value control for Corporation.

USAF Value Engineering Chief Addresses Joint GD Seminar

"Contractual Aspects of Value Engineering," was discussed by Harley Witham, head of value engineering, Aeronautical Systems Division, Systems Command, USAF, Washington, D.C., main speaker at the General Dynamics Value Control Seminar held in San Diego last week, April 27-28.

J. Y. McClure, Corporate director of reliability, quality control, and value control, was chairman of the two-day conference, attended by 14 delegates from 10 GD divisions and Corporate Office.

D. C. Wilkens Jr., assistant to Convair President J. H. Famme, welcomed visitors. Astronautics and Convair shared host duties.

Topics dealt with vital cost reduction and value engineering areas. R. C. O'Sullivan, Corporate director of cost analysis, opened the program with discussion of "Corporate Cost Reduction Program Plans and Elements." He also spoke later on "Guides for Uniform Calculation and Reporting of Value Control Savings to Customers and Corporate Office."

"Guides for the Use of Value Engineering Clauses in Conjunction with Incentive Contracts and Direct Funded Contracts," were outlined by R. A. Wohl, GD assistant to vice president — contracts.

Harlon Filloon of GD/Pomona spoke on "Adjudication and Authorization of Value Control and Other Cost Reduction Projects," and "Cost Targets — Division Management Use of, in Assigning Department Goals and Action Responsibility: The Redeye Case History."

"How to Secure Management Support and Motivation for Value Control Programs," was subject of C. W. Doyle of GD/Fort Worth. W. H. Parry of GD/Convair spoke on "Procurement Value Control," followed by W. B. Roberson, also GD/FW, whose topic was "Optimum Value Through Work Measurement, Simplification, and Crew Loading."

H. P. Williams of GD/Convair and M. M. Reeder, GD/Electronics—SD, discussed "The Problems of Cost Goals for Research and Development Products."

"How to Expedite Company and Customer Approval Action on Value Engineering Proposals," was outlined by H. E. Peterson of Electric Boat.

E. D. Heller, GD/Astronautics, spoke on "How to Minimize Cost Increases as Opposed to Maximizing Cost Reduction."

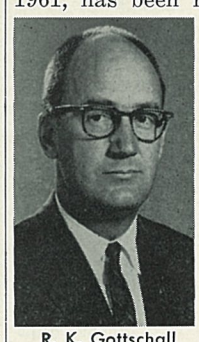
W. P. Karas of Stromberg-Carlson gave value engineering guides, including cost savings, for design engineers, while J. H. Hill of GD/Electronics—Rochester continued with a discussion of design aids for cost control.

Doyle and Williams monitored presentations and discussions of the various divisions' training programs.

Other delegates, besides those named, were F. H. McNeely and R. F. O. Smith of Canadair Limited.

GOTTSCHALL NOW CORP. AD DIRECTOR

Richard K. Gottschall, manager for GD/Convair division since 1961, has been named Corporate director of advertising, reporting to P. J. Sullivan, Corporate vice president in the New York office.



R. K. Gottschall

Division public relations responsibilities, which were a part of the functions reporting to Gottschall, will be assumed for Convair by Fred J. Bettinger, reporting to D. C. Wilkens Jr.

Gottschall joined the company in 1954 as manager of public information on the Corporate level on the West Coast, following a career in journalism on the staffs of the Salt Lake City Tribune and later the San Diego Union. A 1938 graduate of the University of Missouri, Gottschall saw wartime combat duty in the European theater as a captain.

Bettinger, a Marquette University graduate, joined General Dynamics in 1958 following U. S. Navy duty on the West Coast. He was a staff member of **General Dynamics NEWS** before transferring to Convair division as a public relations coordinator in 1961.

HARBERT NAMED TO STAFF POSITION

Assignment of R. C. Harbert to a staff position reporting to E. D. Bryant, vice president-operations, has been announced at GD/Astronautics. Bryant indicated Harbert will coordinate Astro's performance measurement program within operations.

Value Engineering Graduates Increase

General Dynamics' growing ranks of value engineering/value control graduates were swelled to over 3,900 following conclusion of GD/Astro's April seminar.

GD/Fort Worth leads all divisions with 1,060. GD/Astro's one-a-month schedule during the current year has boosted its total to near the 1,000 mark, including those attending orientation sessions. GD/Convair's 21st seminar ended last week, adding 20 more to the over 800 already indoctrinated. GD/Pomona graduated 37 in a March seminar, bringing value control trainees to over 900. GD/Electronics at San Diego has 100 with full workshop training.

PLANNERS — This group is directly responsible for administering ARA's popular Wives' Club activities. Seated from left, Lou Nordick, first vice president; Carol Herman, second vice president; Georgia Hatfield, president; and Margaret Brock, secretary. Standing are board members, from left, Evelyn Morefield, Cay Redlein, Helen Ohland, Audrey White, Maxine Stussy, Lucille Koehne and Ethel Bergelaitis.

More Than 1,500 Roses Entered In ARA-CRA Garden Clubs' Show

Although rainy weather trimmed spectator attendance, records for participation were shattered during the Rose Show April 19 in Balboa Park's Floral Assn. Bldg. by ARA and CRA Garden Clubs.

More than 1,500 roses were displayed by GD/E, GD/Convair and GD/Astro folk!

They entered 247 single blooms, 164 three-bloom entries, 74 arrangements, 28 corsages, and ten children's entries. Prizes and ribbons went to all winners.

Best of Show awards went to Ora Carpenter, best rose; R. S. Davis, best three blooms; Jennymae Williams, best grandiflora; H. S. Boyd, best three grandiflora; Grace Zimmerman, best floribunda; John Volper, best design arrangement; Mrs. F. White, best bouquet; Rose Hart, best corsage; and Ronnie Lewis, son of Charles Lewis, best children's entry.

Winners of first place honors were:

GD/Convair's Dennis Zimmerman, Clayton Finley, Warren J. Cole, Lora Lee Young, Esther Barksdale, Carol Urey, C. W. Begeman (ret.), Margaret Boyd E. L. Zimmerman, M. L. Barksdale and Janice Zimmerman.

GD/Astro's J. H. Powell, Mrs. H. Young, C. J. Lewis Jr., S. J. Williams, C. H. Splinter, Carolyn Buman, R. A. Dirkschneider, James Buman, Arnold Carroll, Mildred Clark, Charles Ulrey and O. J. Wilhams.

Rockhounds Sponsor 'ARAy of Gems' Show

Three events are scheduled this month by ARA Rockhounds, with a meeting May 13, 7:30 p.m. in ARA Clubhouse, heading the agenda.

On May 23, noon to 10 p.m., and May 24, 10 a.m. to 6 p.m., the group will sponsor its first gem show, "ARAy of Gems," also at the clubhouse, and May 29-31 will hold a three-day field trip to Calico Mountains.

The Memorial Day field trip will open with an auto caravan leaving Motel Calico, east of Barstow about 9 a.m., Friday. From the camp site, members plan collecting expeditions throughout the area for specimens of petrified palm root, various agates and jaspers.

Trip details are available from Gerald Halterman, ext. 4283, or home phone 444-5943.

Junior Rifle Club Has Monthly Match

Astro Junior Rifle Club's third monthly match was fired April 18 at CRA's Gillespie Field Range against young shooters from Valley Gun Club of El Cajon. The Valley group led scoring, 1,765 to 1,625.

Top five Astro shooters were John Tramposh with 351; Terry Farrelly, 337; Ron Hill, 335; Bill Crosthwaite, 307; and Richard Ellis, 295. Astro's Dave Farrelly is coach.

On May 16, the club will hold "dress rehearsal" for a NRA regional junior smallbore four-position tournament to be sponsored June 6, 7 by the senior Astro Rifle Club.

Astro Rockets Win Pre-Season Crown

Astro Rockets, ARA representative softball team, rallied in the final inning of their last game in the La Mesa pre-season tournament to down a Navy SubFlotOne team 3-2 and win the tourney crown.

Rocket's win came from successive hits by Gar Winters, Dick Fenton and John Hartzell after a walk to K. F. Fincher, who was credited as winning pitcher for all four tourney games. Astro also relied heavily on pitcher Roy Neie.

Management Series To Total 20 Hours

All GD/Astro salaried employees are eligible to take part in a new "Pyramid Club" series of conference management courses, sponsored jointly by Management Club and educational services (Dept. 130-3).

Course totals 20 hours' training, with the time divided between instruction and practice. Under the "Pyramid Club" concept, those who complete the course will be asked to teach subsequent classes.

Interested personnel are asked to send an "AVO" to Gene Graves, zone 529-00, indicating preference for the Breakfast Club (7-8 a.m. daily, four weeks), afternoon session (bi-weekly, 5-7 p.m., five weeks), or evening session (bi-weekly, 7-9 p.m., five weeks). Those choosing afternoon or evening meetings should indicate preferred two days per week.

All classes will meet in-plant.

Twilight Golf Loop Entries Will Close

Entries for ARA's popular Twilight Golf leagues will be accepted through noon, May 15, at GD/Astro employee services outlets, and play will begin May 25.

Team cost for the program is $25. Of this, $15 goes for league prizes and the balance for forfeit fees. Each time a team member forfeits, $1 will go into the prize fund. The unused forfeit balance will be returned to teams at season's end.

Team captains will receive detailed instructions on ground rules by May 20.

Winners Few At Trapshoot

Winners were scarce at CRA-ARA Gun Club's Troy trapshoot, held the last Sunday in April, with the big prize dangling just out of reach.

Of the dozen competing, only three went home richer. CRA Commissioner Jack Swank made expenses by tying in both 16-yd. and high score. He got a total of $9.

Swank and Jim Prewitt both shot a perfect 25 straight in the 16-yd. for $4.50 each. Jack Rogers and Swank won $4.50 apiece for high scores of 45. No one shot 25 straight in the handicap event and the $127.75 stake for the combined perfect score went unclaimed.

The pot's been sweetened to $136.75 for the combined winner, if any, at the next Troy shoot May 31. In all, there is now $173.50 awaiting winners.

Gun Club's next big shoot at Gillespie Field Range will be a registered ATA trapshoot May 17. Competition begins at 10 a.m. with practice traps open at 8:30 a.m. Silver service prizes, including such items as cassaroles, lazy Susans, coffee servers and trays will go to winners in each classification.

Water Skiers Urged To Attend Meeting

Water ski fans wishing to participate in activities and instruction offered this season by ARA Water Ski Club have been urged to attend the group's meeting, 7:30 p.m., May 12 in ARA Clubhouse.

Commissioner Bill Johnson said increased popularity of the sport plus the club's broader schedule has made it imperative that interested GD/Astro employees and dependents sign up at once to permit completion of planning.

The club's two ski boats will operate weekends this summer on Mission Bay.

Symposium Held On Human Factors

General Dynamics has supplied key figures in the Fifth National Symposium on Human Factors in Electronics meeting yesterday (May 5) and today at the U. S. Grant Hotel, San Diego.

The affair was under the sponsorship of the Institute of Electrical and Electronic Engineers.

Symposium committee members included Wesley Woodson, Eric Herz, Mel Freitag, Bill Davenport and Marlowe Lesh of Astronautics; Donald Conover of Convair; and Robert Bottoms and Paul Athan of Electronics-San Diego.

Taking leading roles in sessions were Astro's Dr. Dave Meister, Larry Fogel, M. J. Walsh, J. M. Lagerwerff, H. D. Fyffe, and R. S. French.

Early Scheduling Of Flights Urged

Air transportation for GD/Astro business travelers between San Diego and Vandenberg AFB is now provided via company-owned Aero Commanders, since termination of Pacific Airlines service April 26.

Reservations for San Diego personnel continue to be made through the Travel Reservation Center, GD/Astro, ext. 4355. Because of limited space trips should be scheduled as far in advance as possible.

Flights on Monday, Tuesday, Thursday and Friday leave San Diego at 8 a.m., and arrive Vandenberg AFB at 9:50 a.m. following a 10-minute stop at Norton AFB. Return flights leave Vandenberg at 4 p.m., via Norton, and arrive in San Diego at 6 p.m.

On Wednesday, Edwards AFB is added to the north-bound itinerary, delaying Vandenberg arrival until 10:30 a.m. Return trip arrival in San Diego is unchanged.

Air Force Industry Trainees Tour Astro and GD/E Plants

Tours of both GD/Astronautics and GD/Electronics-San Diego highlighted a two-day visit last month for Air Force officers assigned to the Education-with-Industry program at west coast industries.

Participating, in addition to AFEWI personnel in the current GD/Astro program, were officers assigned to Douglas Aircraft, The Boeing Company, The Ralph M. Parsons Co., and the firm of Daniel, Mann, Johnson & Mendenhall.

On April 23, visitors were welcomed to GD/Astro by R. A. Evans, manager of personnel administration. During a morning program, they heard comment by Col. M. K. Andresen, AFPR; J. A. Croft, chief of educational services, official host for the visit; and K. A. Schuele.

Management concepts of major GD/Astro functions were described by E. G. Hill, controller; C. W. Blakey, director of contracts; P. D. Ferrara, chief engineer-administration; and E. D. Bryant, vice president-operations.

They made tours of both Astro Plants 71 and 19.

The second day (April 24) they were introduced to several GD/Electronics' products in presentations at GD/E Plant 1, followed by a visit to the division's new manufacturing development laboratory.

J. W. Colvin, manager of plans and programs, welcomed visitors. R. A. Glaeser explained data products in production and under development; J. B. Gehman talked about the Aircraft Station Keeper (ASK) radar; R. F. Schillinger, the Terrain Following Radar. A. R. Zagon gave a presentation on Head-Up display. G. D. Patrick conducted the laboratory tour. GD/E arrangements were coordinated by D. H. Pile, AF requirements engineer.

AFEWI officers presently assigned to GD/Astro are Majors Michael J. Kentosh, Fred Gluck, John E. Doyle Jr. and Joseph F. Gricius Jr. Program coordinator is Emory Thurston, Dept. 130-3.

Visiting officers were Majors Duke S. Kimbrough, Norman N. Stout, Ollie D. Miller, Marion C. Nicolai, Captains Edward W. Lingel, Bobbie L. Jones, Joe J. DeLaTorre Jr., Robert S. Howey, and 1st Lt. John L. Crochet Jr., all from Douglas; Captain John Harris from Parsons Co.; Major Frederick W. Johnson and Capt. James J. Bradley from DMJ&M.

From Boeing were Lt. Col. J. A. Briggs, Majors J. G. Courlas, G. C. Earle, Captains M. H. Franzen, S. H. Bohinc, E. A. St. John, and 1st Lt. N. M. Sorensen.

Technical Writers Will Hear Creutz

Dr. E. C. Creutz, vice president of research and development for General Atomic, will keynote the 11th annual convention of the Society of Technical Writers and Publishers May 14-16 at San Diego's El Cortez Hotel.

Dr. Creutz will speak on "The New World of Information" at the May 14 luncheon.

Other General Dynamics men are scheduled to take part in the convention which will draw 600 from all parts of the country, and displays from at least 30 firms.

L. J. Solheid, GD/Convair technical publications supervisor and second vice president of the national organization, will conduct the chapter chairmen's workshop first day of the convention. Al Gross, manager of GD/Astro publications, will emcee the Friday luncheon session.

Henry Pallulat and R. W. Ellard, both of GD/Astro, will present papers.

Serving on the convention committee are the following Astro men: James Carr, A. L. Ward, Walter E. Brees, Miles Gordon, James Rowland.

Astro Men Elected To IEEE Positions

Two GD/Astro men have been elected to top offices in professional technical groups of the Institute of Electrical and Electronic Engineers (IEEE).

Milton M. Chazotte is chairman, and Francis M. Millican, vice chairman, of the combined Microwave Theory and Techniques, and Antennas and Propagation professional technical groups (MTT/A&P) for the San Diego area.

Chazotte supervises GD/Astro's antenna and microwave systems group (Dept. 549-9), and Millican is a design specialist with electromagnetic compatability group (Dept. 549-8).

Four Year Task Nearing Climax

Fourteen General Dynamics men and women are on the last lap of a four-year task which will culminate in completion of the new certificate program in technical writing this spring.

The program, formally established last June, is sponsored jointly by GD/Convair and San Diego Junior Colleges. Educational services, directed by H. W. Rubottom, coordinates the program.

The first "graduating" Convair, GD/Electronics, and Astronautics students entered what was to become the certificated program with the first technical writing class at Convair the summer of 1960. Louie Henderson, instructor, had 30 students in his first Basic Technical Writing course.

Since then, the 14 have taken all five required and two elective technical writing courses listed when the certificated program was formulated. Wayne Turner, educational services coordinator, points out that this semester is the first time anyone could have possibly completed the entire program.

Qualifying for certificates are: Frank Adams, Avery O. Camp, Victoria Eberly, Clarence E. Hitson, Leonard M. Hogoboom, Alexander J. Haefner, Edward C. Jankowski, Stanley S. Kieliszek, Samuel T. Mahone, Lyda McCleary, Eythel Newman, Jeannette O'Brien, William R. Orviek, Andy Puskas.

Besides Henderson, other instructors have been Alan Walden, Francis Linderman, Irving Litchfield, Marvin Feuerborn, and William Stewart.

FIRST GRADUATES — Part of initial group of General Dynamics students in final stages of new Technical Writing Program (on stage) are, from left: A. O. Camp, S. S. Kieliszek, W. R. Orviek, Victoria Eberly, Samuel Mahone, Eythel Newman, Frank Adams, Lyda McCleary, Alexander Haefner, Leonard Hogoboom, Edward Jankowski. Seated are instructors Marvin Feuerborn and Louie Henderson with K. D. Fawcett, SD Jr. Colleges coordinator of technical education, at left, and Wayne Turner, educational services coordinator, at right.

AT THE HELM — Newly-elected officers who will guide Astronautics Recreation Association through coming year are shown in relaxed mood on installation night. From bottom to top, they are Ludy Moeller, president; Jack Garrison, vice president; Cliff Kickbush, treasurer; and Bob King, secretary.

Cheek, Crotz Pace Golfers

Entries open May 18 for ARA Golf Club's next tournament, June 6 and 7 at Balboa. A $1 forfeit fee will be assessed those who reserve starting times and fail to use them without cancelling prior to May 27.

In the April "Pinehurst" event at Fletcher Hills, low gross winners in the 0-12 handicap bracket were Don Cheek and Ken Crotz with 71, trailed by Fulton Smith and Paul Hooten with 77. Net honors went to Phil Raney and Roy Cleary with 65½, and Harry Richards and J. E. Ross, 67.

In the second flight, 13-16 handicap, Wayne Pence and R. Hodge had first low gross with 73, while Dock Torrence and W. H. Behrens scored 81 for second. Low net was a 65½ by Gene Petzen and Owen Hasbrooke, followed by 67 from F. B. Lubo and G. Nichols.

W. W. Woolf and J. Skogland scored 85 for low gross in the 17-20 bracket, with Lou Marine and A. Corrao's 87, second. Ed McCleave and E. Oliwa had low net 67½, while Jim Busby and P. Williams shot 69.

Playing with 21-and-up handicaps, Hal Heist and S. R. Sieler scored low gross 91, with 92 from R. R. Ried and J. Getz. G. M. Washburn and Fred Wynkoop's 67 was low net, while second low net honors were shared by Mr. and Mrs. Phil Parker, and Joe Terramagra and F. O. Clark, both with 68s.

Budget Executives Elect John Morgan

John B. Morgan, Astronautics manager of financial control—SLV, has been elected president of the national Budget Executives Institute.

Past president of the San Diego Chapter of the national group, Morgan also served as national executive vice president (1963-64) and secretary-treasurer (1962-63).

BLOOD SOUGHT FOR LEUKEMIA VICTIM

Three-year-old Tyler Lee Hawley, nephew of GD/Astro's Gene Elwell, Dept. 673, is a victim of leukemia, requiring massive blood transfusions over a continuing period.

Elwell has asked that any Astro people who might care to help make donations at San Diego Blood Bank, 3405 Fourth Ave., crediting the blood to young Hawley at Stephens Memorial Hospital, 1025 - 25th Ave., So., Edmunds, Wash. Elwell can be contacted for details at 453-4851, or after 4:15 p.m., at main plant ext. 658.

ARA Calendar

(GD/Astronautics Recreation Association has some 40 activities in operation for employees. For information, call ARA Headquarters, ext. 1111.)

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AMATEUR RADIO — Club meets 7:30 p.m., May 13, ARA Clubhouse. Planning for ARRL Field Day.

ARCHERY — Shoot, 1:30 p.m., May 10, ARA Area range. Business meeting tomorrow (May 7), 7:30 p.m., ARA Clubhouse.

COINEERS — Meeting 7:30 p.m., May 20, ARA Clubhouse. Free uncirculated coin for all attending.

DANCE — ARA Spring Dance, May 9, El Cortez Hotel. Buster Carlson's ARA band. Tickets $1 at employee services outlets.

FISHING CLUB — Meets today (May 6), 7:30 p.m., ARA Clubhouse. Planning for year's program and activities, including Salton Sea trip May 23. Movie: "Secret Cargo."

ORGAN — Concert featuring Richard Smith, 2:30 p.m., May 17, ARA Clubhouse. Donation 75 cents.

SCULPTURE — Club meets Mondays, 7:30-10 p.m., art room, ARA Clubhouse. Information from F. A. Pall, Plant 19, ext. 1386.

SLOT RACING — Track open Monday through Friday, 7-9 p.m.; weekends by arrangement. ARA Area picnic pavilion.

STAMP CLUB — Meeting 7:30 p.m., May 14, ARA Clubhouse. Slide show on Canadian issues.

TOASTMISTRESS — Serra Mesa Club meets 7:30 p.m., May 18, ARA Clubhouse. Program on speech evaluation. Guests welcome. Information, Scarlett Smith, ext. 1313.

Circle Offers Bargain Rate

By joining "Circle Arts Angels," GD/Astro employees will be able to purchase season tickets for the 1964 schedule at San Diego's "theater-in-the-round" at discounts of nearly 50 per cent!

Shows and headliners arranged for this summer are "Sound of Music," June 11-28, with Patricia Morison; "Li'l Abner," June 30-July 12, Peter Palmer; "Music Man," July 14-26, Forrest Tucker; "Gentlemen Prefer Blandes," July 28-Aug. 9, Jayne Mansfield; "King and I," Aug. 11-23, Gisele Mackenzie; and "My Fair Lady," Aug. 25-Sept. 13.

Employees pay a $5 "Angel" membership fee at any employee services outlet. Upon receipt of a membership card by mail, they arrange through Circle Arts box office to purchase a season ticket for any night except Saturday during the first week of each show's run.

By buying this one ticket, they receive a second ticket for an adjoining seat, free.

For example, two season tickets for seats in the first six rows normally cost $54. Angel members buy a membership for $5, then pay for only one seat ($27), for an overall saving of $22.

DEDICATED — Volunteer efforts of these GD/Astro employees in development of Recreation Area and ARA Railroad were recognized recently with trophies and jackets presented by ARA President-elect Ludy Moeller. Those wearing jackets with distinctive crest have each contributed more than 100 hours' leisure-time labor.

Jackets Honor ARA Volunteers

Nearly 3,000 manhours of volunteer labor contributed to development of ARA's recreation facilities—much of it centering on the new ARA Railroad—were recognized last week.

In informal lunch-time ceremonies, ARA President-elect Ludy Moeller presented trophies to those who had contributed more than 20 hours, and similar awards to 60-hour workers. Nineteen persons were recognized for devoting more than 100 hours each to the effort.

Receiving handsome scarlet jackets with ARA "100-Hour Club" emblems were T. H. Buckley, J. E. Henderson, Leo Heyob, A. J. Kent, Dirk Mous, Romeo Quintin, M. L. Strieff, D. E. Tibbs, G. R. Vollmer Jr., Harry Tooley, N. S. Munson.

A. J. Varon, R. S. Bostrom, Mrs. Orene Bostrom, C. Fields, C. M. Churness, C. Sack, John Hess and C. Geer.

Sixty-hour awards went to J. W. Tates, C. C. Uray, Y. O. Koba, R. M. Shuck, G. C. Swaim, B. T. Valentine and G. N. Churness.

Honored for 20 hours' efforts were L. Lacava, D. W. Seymour, D. P. Souza, J. W. McMahon, J. R. Stephen, O. Olson, J. L. Nicodemus, H. A. Amundrud, C. R. Kibbee, R. H. Bowersox, J. Kernoski, V. A. Miller, R. C. Reisinger.

C. C. Leikam, P. P. Nitschke, C. L. Gwin, E. R. Kline, Swaim, E. L. Mudge, Valentine, W. A. Shoemaker.

Teen Sweetheart Judging to Start

Preliminary judging in ARA Teen Club's "Teen-age Sweetheart" contest will be held at noon, May 16 in ARA Clubhouse, with semi-finalists to be introduced at the club dance that evening.

As a special attraction, the May 16 dance (7:30 to 11 p.m.) will feature the well-known "Cascades" as guest artists, in addition to the "Inspirations" band which will play for dancing.

Each member may bring a guest couple, with school clothes appropriate. For this event only, admission is raised to 75 cents per person.

Sports & Recreation

PLANT CHAMPS — Trophy winners in ARA's annual plant championship tournament show off awards during dinner-dance presentation. All shown are winners, except Forest Erwin, right, who presented awards. Seated at left are Charles Pellicano and Linda Robinson, All Events winners, while Elaine Nordberg and Harry Lund, singles winners, are at right.

Volunteers Give Leisure Time To Work on New ARA Railroad

A big job with big interest among the recreation-minded at GD/Astro is the new ARA Railroad, being built "from the ground up" by volunteer labor.

Work is progressing on two fronts, factory and ARA Area.

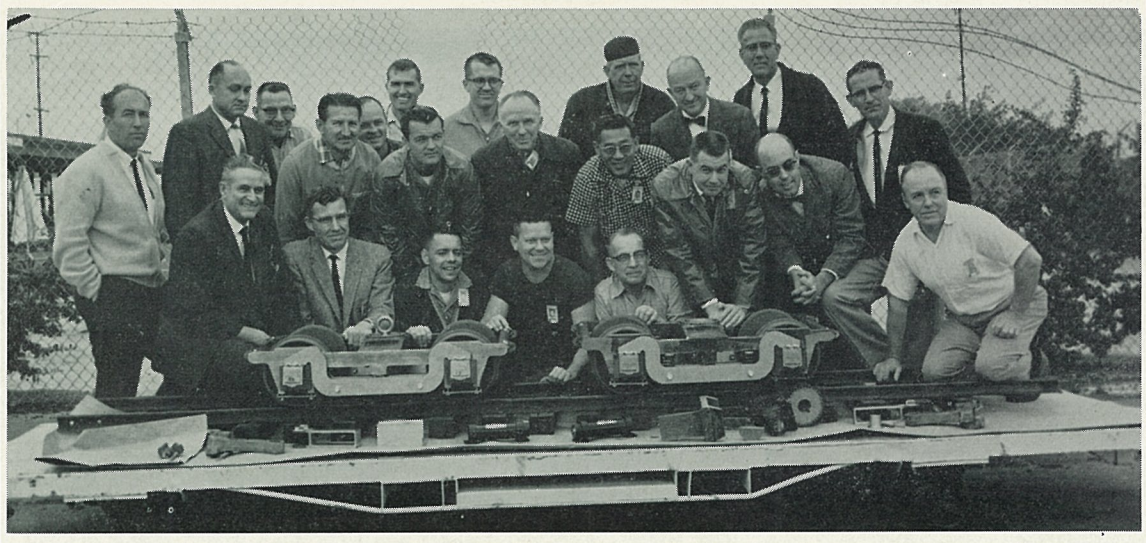
In the factory, skilled craftsmen have volunteered many leisure hours to fabricate parts of a "diesel" engine and cars—the railroad's rolling stock—after normal factory operations are concluded for the day. Five cars will eventually be built.

Working on the project to date have been men of Depts. 452, 451 and 731, with volunteers now being sought among sheet metal workers as construction nears the "body work" stage.

In the ARA Area, other volunteers working Saturdays have a handsome engine house nearly completed, and track-laying is under way. Basically, the railroad will consist of a closed loop around the Recreation Area, with a storage spur and tracks into the engine house.

ARA Commissioner Marty Stutz is coordinating the volunteer work, and has encouraged all GD/Astro employees and their families with a yen for railroading to investigate the program.

"We can find useful and interesting tasks for nearly everyone," he said. "Anyone with a will to work is welcome during our Saturday morning sessions in ARA Area."



"ROUNDHOUSE GANG" — Some of GD/Astro men who have volunteered time and talent toward construction of "rolling stock" for ARA Railroad are pictured here with handiwork. Shown are trucks for "diesel" engine now in advanced stages of fabrication.

Snow Skiers Ranked In Six Categories

Astro Snow Ski Club's competition at Mammoth last month drew 45 fans who vied in six categories.

Top ranked in advanced women's class were Helen Navoy, Helen Rockafeller, Jean Kunde; in advanced men's, Ed Bock, Gene Rockafeller, Tibor Lody, Larry Gray.

In intermediate women's class were Lavon Martinez, Connie Varonfakis; in intermediate men's, Ola Brevig, Charlie Hill, Robin Bithel, Gerry Goodman; in novice women's, Barbara Norris; and in novice men's, Vern Norris, Lloyd Terpening, Marshal Stoughton.

Final meeting of the ARA group this season is set for 7:30 p.m. today (May 6). Movies of recent trips will be shown.

Modeler Sessions Will Begin May 9

If you've never tried model building—or if your first effort didn't turn out so well—a new ARA program may be what you're looking for.

Potential GD/Astro modelers of all ages have been invited to bring their kits or projects (with appropriate tools) to ARA Clubhouse on Saturdays, 9 a.m. to 4 p.m., to work with an experienced model builder to assist.

Emil Caluory, Dept. 522-8, is experienced in all types of model building. There is no charge. Advance registration is not required. First gathering is May 9.

BRIEFING ON MAULER — Lt. Gen. Frederic J. Brown, commanding general Sixth Army, Presidio of San Francisco, and C. F. Horne, president of General Dynamics/Pomona, study model of Army's Mauler missile system being developed by GD/Pomona. General Brown was recent visitor at Pomona facility.

Satellite 'Blistered,' 'Chilled' in Astro Lab

A satellite moving in an earth orbit is subjected simultaneously to the blistering glare of unfiltered sunlight, and the dark chill of space.

At the same time — to compound these temperature problems further — the satellite's instruments require approximately "room temperature" to function normally.

At GD/Astronautics, a key tool in meeting the challenges posed by this sort of "thermal sandwich" is the space simulation facility of the division's aerophysics lab.

Here test specimens — complete satellites, components, space vehicle subsystems — can be studied with laboratory thoroughness while they are being subjected to accurate thermal simulation of conditions in space.

The space simulator is the northernmost of two 35-ton vacuum chambers set end to end under a sheltering roof on the east side of Bldg. 28 at the main plant, San Diego.

The area is open on three sides (although two sides have curtains for weather protection), providing ventilation for safety during tests involving such substances as liquid hydrogen.

The simulator itself is a cylindrical chamber 19 feet long, with a 12-foot inside diameter, and equipped to duplicate space conditions for thermal and vacuum testing by providing vacuum, extreme cold, and almost perfectly simulated solar radiation.

The cold of space is reproduced by a liquid nitrogen cold wall (temperatures of about -300° F.), painted with a flat black absorptivity coating, which lines the chamber interior.

Three mercury diffusion pumps, backed up in series by a like number of mechanical pumps, empty the air from the simulator to duplicate pressures at altitudes of about 80 miles.

For nearly perfect simulation of the solar spectrum, the facility is equipped with a trio of powerful carbon arc lights which beam into the chamber through quartz windows to focus on the test subject. In the near future, a controlled and programmed tungsten-quartz lamp system will be installed to add simulation of reflected planetary light and thermal radiation.

Within this hostile environment hangs the test specimen, suspended from a fixture which can be rotated by remote control. Thermocouples and other detection devices feed information from the specimen to a 200-channel guarded data acquisition unit located outside the chamber on an adjacent instrumentation and control deck.

(Here, too, is located equipment which air conditions the simulator when it is not in use, protecting electronic systems and thermal surfaces from dust and moisture, and permitting more rapid "pump-down" of the chamber when a test is set up.)

The acquisition unit records information from the test subject as printed data for "quick look" purposes while a test is in progress, or in punched tape form as an input for GD/Astro's IBM 7094 computer.

Thirty land lines link the facility with GD/Astro's analog and digital computer labs for system control and additional data handling capability.

The facility is operated as part of the propulsion department under Chief Engineer F. A. Stephenson, and specifically by personnel of the thermodynamics group (Dept. 528-1) reporting to R. E. Tatro, acting chief. Lead engineer for most space simulation testing is John Griffith, design specialist.

ANTWERP MEETING HEARS ASTRO MAN

GD/Astronautics' Conrad M. Boekamp of reliability control's process control labs addressed the third international symposium on radio and gammagraphy in nuclear and high pressure vessels, March 18 in Antwerp, Belgium. He described quality assurance and reliability procedures in U. S. aerospace programs for 200 scientists from 10 nations.

Eleven General Dynamics Scholarships Awarded

(Continued from Page 2)

son, son of Mr. and Mrs. Leslie C. Erikson.

Electronics-SD—Paul Raymond Cary, son of Mr. and Mrs. Raymond J. Cary Jr.

Fort Worth—Lesley M. Wilson, daughter of Mr. and Mrs. Leo E. Wilson.

General Atomic—Charles W. Loomis, son of Dr. and Mrs. Charles C. Loomis; Bruce Stewart, son of Dr. and Mrs. Hugh B. Stewart.

Pomona—Lawrence J. Johnson, son of Mr. and Mrs. Roger L. Johnson; Christine Tubbs, daughter of Mr. and Mrs. Douglas C. Tubbs.

Thomas Crouch is a senior at Clairemont High School, San Diego. He is a life member of the California Scholarship Federation, member of the school's Math Club and team, and winner of Math Departmental Honors Awards in his freshman and sophomore years. He plans to major in mathematics at Harvey Mudd College.

Dean Sandin will graduate from Herbert Hoover High School this semester. He holds a life membership in CSF and has been a member of the high school math team in his junior and senior years. He devotes outside time to publishing and editing the Science Fiction Review. Dean intends to major in physics at the University of California at San Diego.

Robert Franson also will be graduating from Hoover High School this spring. He has teamed with Dean Sandin to publish the Science Fiction Review and was co-organizer and president of the school's Math Club. For four years he has been a junior scientist at the San Diego Museum of Natural History. He will enter the U. of California at San Diego for a physics major.

Bryan Cheney, presently in Germany with the American Field Service, is enrolled at Grossmont High School. Last year he served as president of the school chapters of CSF and the National Forensic League. He received the school's Outstanding Debate Team Award in 1962 and 1963 and attended the State Finals in Debate in 1962. He will major in architecture at Harvard College.

David Erikson is a senior at Robert E. Fitch Senior High School, Groton, Conn. Currently he holds offices of president of the school's German Club, co-captain of the debating team, vice president of the school's United Nations Club, member of senior class executive board, Student Council, Key Club executive board, and is on the school newspaper staff. David plans to major in liberal arts at Columbia College, heading toward teacher's credentials.

Paul R. Cary is a senior at Helix High School and member of the CSF. He took part in the Grossmont Union High School District Summer in Science program, Greater San Diego Mathematics Field Day, and at present is deep in work on his own individual ecological study of a local species of snake. He will major in zoology at Stanford University.

Lesley Wilson is attending R. L. Paschal High School, Fort Worth, where she has been named outstanding graduating science student. She is member and current secretary of National Honor Society. In 1961 she won first place, features, at the Interscholastic League Press Conference. She was Scholastic Art Awards Gold Key winner the same year and won a letter and pin for skill in mathematics in 1963. She will enroll at Reed College, Portland, Ore., this fall.

Charles Loomis is completing his high school course at La Jolla Country Day School. Last year he won the Board of Trustees Award for Scholarship, the upper school Math and Science Awards. This year he has co-captained the varsity wrestling team. Charles intends to major in mathematics at Stanford U.

Bruce Stewart is a senior at San Dieguito Union High School, Encinitas, Calif. He has been a member of CSF during his four high school years and is a CSF Sealbearer. This spring he took first place in the team test at the San Diego Math Field Day. He won a first place in chemistry division at last year's San Diego Science Fair and another first in the American Chemical Society High School exam, SD County Chapter. During the summer of 1962 he attended Le College Cevenol, France. He will major in mathematics, also at Stanford.

Lawrence Johnson will graduate this spring from Webb School of Calif., Claremont, Calif. He is editor of the school literary magazine, business manager of the school newspaper, and has served as president of the school debate group. He also is a life member of the California Scholarship Federation. Lawrence has won two varsity letters for his track prowess. He plans to major in premedicine at Northwestern University.

Christine Tubbs is a student at Fullerton Union High School, Calif. She has been editor of the school newspaper and member of the executive board the last two years. This year she was a first-place winner in editorial writing at the Journalism Education Association Competitive Writing Tournament. She is a life member of California Scholarship Federation, besides taking an active part in the school's service clubs. She will enter Pitzer College this fall to begin work toward a psychology degree.

"People Mobility"

Transfers Among GD Divisions Continue at Steady Pace

Transfers of qualified personnel from one General Dynamics division to another to meet special requirements or fill vacancies continue at a steady rate.

During 1963 nearly 900 separate transfers were effected, in line with Corporate policy to take maximum advantage of skills and capabilities and to broaden experiences. All Dynamics divisions were involved in the interchange.

Recent personnel shifts include:

R. K. Gottschall, with General Dynamics since 1954, from Convair division to Corporate Office as director of advertising; **Fred Jensen** (1956) from Convair to Astronautics' division systems; **Vince F. Cernuto** (1934) from Convair to Astro material operations scheduling; **Joseph Gnas** (1955) from Convair to Astro Centaur engineering; **E. H. Damarus** (1940) from Convair to Astro chief of applied manufacturing research and process development.

Robert A. Westerwick (1952) from Astro to Convair engineering.

Thomas R. Sparks (1962) from Astro to General Atomic; **Clifton D. Hollis** (1947) from Astro to GD/Fort Worth support equipment projects; **Frank Yost** (1960) from Astro to General Atomic; **R. E. Sutherland** (1956) from Astro to Electric Boat as head of personnel administration; **Charles W. Dickinson** (1963) from Astro to Pomona engineering.

L. F. Boring (1940) from Convair to Pomona electronic assembly and test; **R. J. Zusag** (1958) from Convair to Pomona engineering; **Eric Milnor** from Astro to Pomona engineering; **C. F. Clark** from Astro to Pomona electronic assembly and test; **C. W. Dickinson** from Astro to Pomona engineering; **S. P. Scesney** from Astro to Pomona engineering; **H. M. Nance** from Astro to Pomona electronic assembly and test.

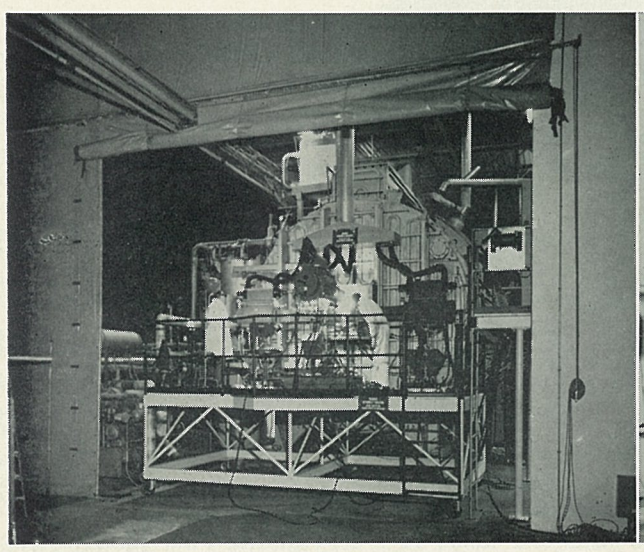
Eddie C. Dorris (1956) from Astro to Fort Worth.

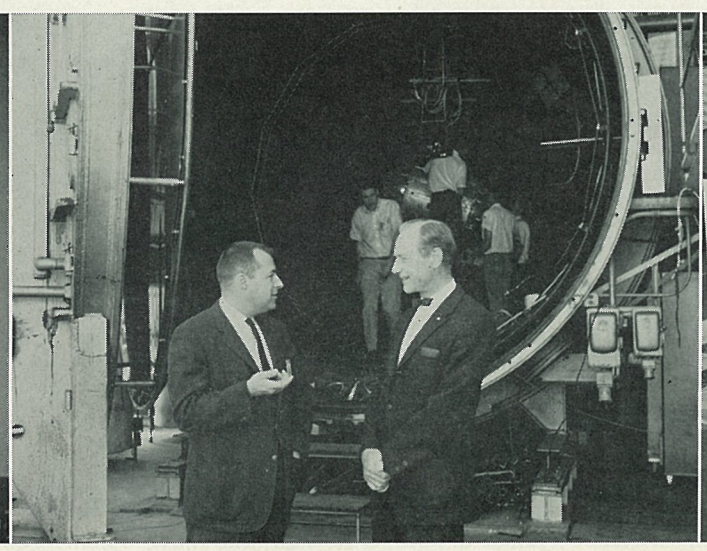
L. R. Janicki from GD/Electronics-San Diego to Pomona engineering; **R. L. Hurst** from GD/E-SD to Pomona electronic assembly and test; **Glenn Woods** from GD/E-SD to Pomona administrative systems analysis.

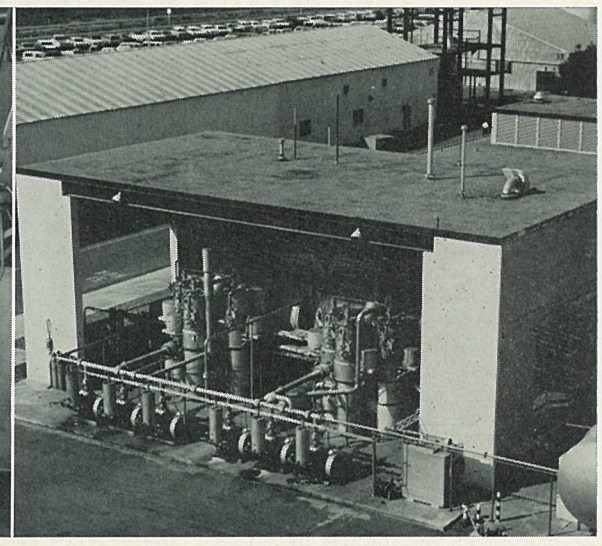
J. E. Dodge (1953) from Convair to Fort Worth maintenance engineering; **E. L. Williams** (1946) from Convair to Fort Worth factory management; **Lee House** (1947) from Convair to Fort Worth electrical; **Carl F. Uhl** (1936) from Convair to Fort Worth wing assembly; **T. L. Baker** (1964) from Convair to Fort Worth tool room & fixtures; **G. H. Rothwell** (1962) from GD/E-SD to Fort Worth avionics systems.

J. T. Bony (1955) from GD/E-Rochester to Stromberg-Carlson wage and salary; **A. J. Zambito** (1957) from S-C to GD/E-Rochester.

Sam Rowland, formerly Convair, to General Atomic safety.





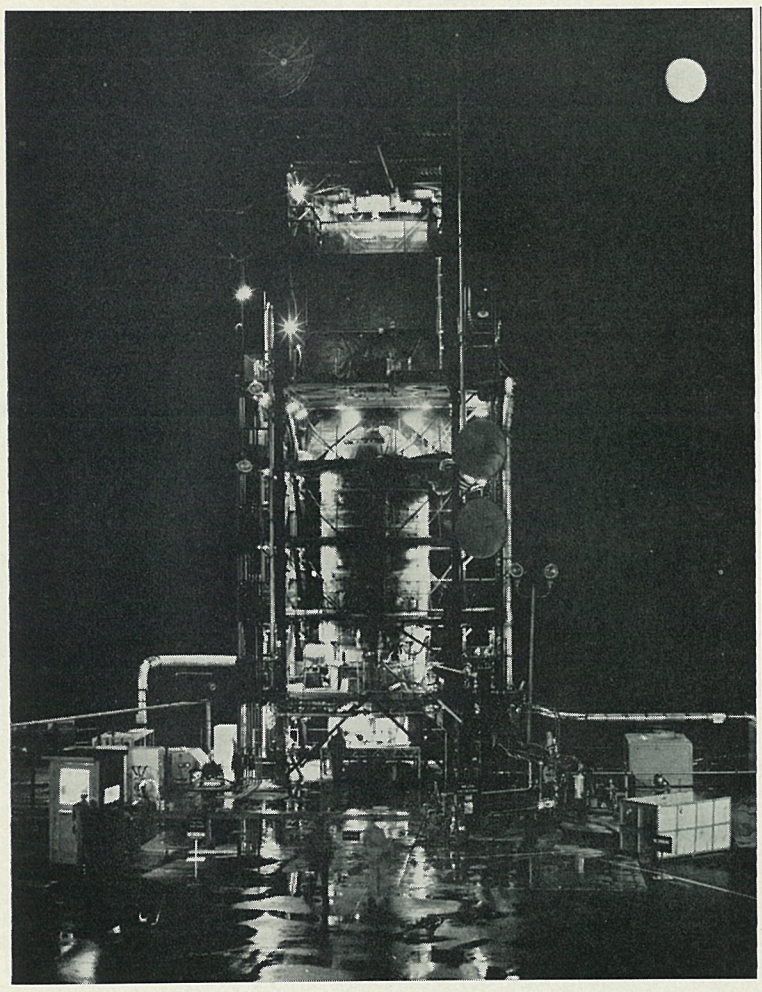


SPACE FACILITY — In use at GD/Astronautics is facility that simulates blistering heat as well as chill of outer space. In center, heavy door of chamber is open as fixture is attached inside. Robert Tatro, chief of thermodynamics (acting), is at left, discussing test with Eric Lindkvist, manager of scientific satellites.

GD
ASTRONAUTICS EDITION

GENERAL DYNAMICS NEWS

Vol. 17, No. 13 PUBLISHED BY GENERAL DYNAMICS CORPORATION Wednesday, June 17, 1964



SEE ME, CENTAUR! — Moon, some 240,000 miles away, seems mighty close to Centaur test vehicle at Astronautics' Sycamore Canyon Test Site. Centaur will begin operational flights to moon next year. Meanwhile, test program is in full swing. This "battleship" propulsion test vehicle supports development effort.

IRS Approval On Retirement Plan Received

Internal Revenue Service (IRS) approval has been received on a vastly improved retirement program covering GD/Astronautics salaried employees.

Benefits and provisions of the program date back to Jan. 1, 1964, when Roger Lewis, General Dynamics president, first outlined details of the plan (**GD/NEWS**, Jan. 15).

Only final IRS approval has been pending.

Annual statements for participants, normally distributed shortly after the first of the year, were held up this year pending approval of prospective changes. Statements are currently being processed and will be distributed in-plant to all participants by July 1.

Statements this year are being prepared in more detailed form. They will show a comparison of accrued benefits (through 1963) under provisions of the plan prior to changes and amendments as well as those now due following recomputation under the improved plan.

Salaried employees have enjoyed one obvious benefit—since Jan. 1—the decrease in employee contributions to the plan by one half!

Other improvements include updating and increasing all prior accrued benefits on the basis of salary levels as of Dec. 31, 1963; provision for a permanent and total disability benefit; and liberalization of early retirement benefits.

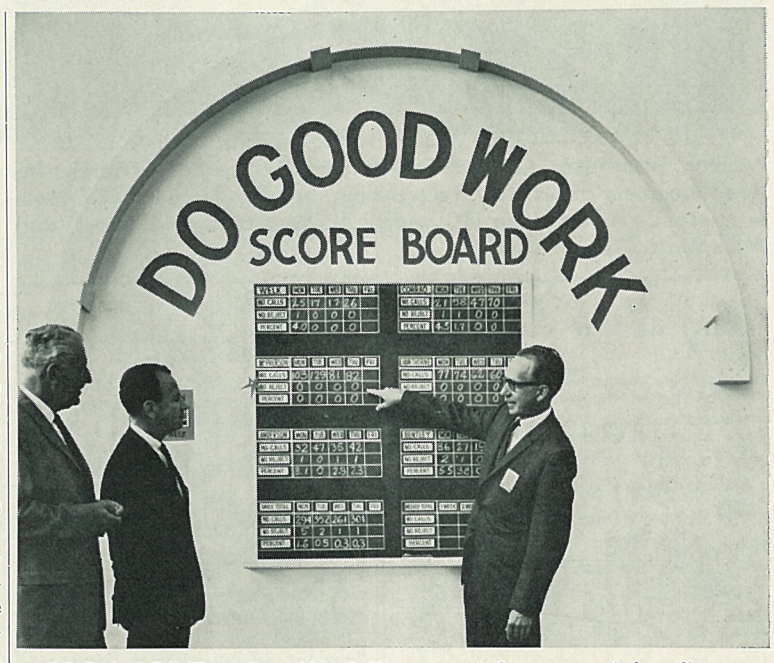
Too, the program increases interest rates (from 2½ to 3½ per cent) on employee contributions.

Detailed information on the new program was presented Astro participants earlier this year in a series of special meetings.

A new booklet covering the entire salaried retirement program will be distributed to all participants in the near future.

GEORGE MARANON'S ENTRY A WINNER

GD/Astro's George Maranon, Dept. 525-6, won first place honors for technical manual illustration in a competition in conjunction with the annual convention of the Society of Technical Writers and Publishers in San Diego last month.



FOCAL POINT — Ray Kendall, general foreman, right, discusses Dept. 758's "Do Good Work" scoreboard with GD/Astro's E. E. Durbin, left, chief of quality control, Plant 19, and L. R. Kiersey, chief, materiel quality branch, Plant 19 (AFPRO). Kendall points to perfect score achieved by crew under Earl McPherson. Board holds another perfect record for crew under Herb Hawthorne.

Vandenberg Dept. Repeats Victory

VANDENBERG AFB — First "repeat winner" in GD/Astronautics division-wide Craftsmanship program was announced last week, when May honors in the competition here were awarded to Dept. 682-5 (MAB-5).

This department, headed by Roy V. Woodle, previously won April honors in the first contest conducted here.

Also competing at Vandenberg is Dept. 682-1, also under Woodle, Dept. 682-2 headed by F. M. Anderson, and Dept. 369-4 under V. D. Wynn.

Representing President J. R. Dempsey at award ceremonies June 10 was Travis L. Maloy, manager of test and launch operations—Space Launch Vehicles.

"It is particularly appropriate that the first department to win monthly Craftsmanship competition twice is here at Vandenberg," he said. "Since you are 'on the firing line'—here at the point of launch—your performance is the vital final link in achieving the goal of total reliability which GD/Astro has set for its products."

Don L. Fagan, GD/Astro operations director here, also commended Woodle and the department on earning two consecutive awards in the Craftsman program.

Dept. 682-5 employees were presented with individual Craftsmanship certificates and will retain the large Craftsmen-of-the-Month banner in their work area during the month.

CREWS COMPETE FOR GOOD WORK

Hot contenders in GD/Astronautics monthly Craftsmanship award program, the men of Plant 19's major assembly (Dept. 758) have accepted the division's "Do Good Work" philosophy as a personal challenge in their daily work.

The department, under General Foreman Ray Kendall and Foreman F. P. "Tex" Vining, has a hand in fabrication of tanks for all GD/Astro space boosters—the Atlas ICBM, Atlas Space Launch Vehicle, and Centaur.

To keep tab on their own achievements, the performance of each "crew"—groups headed by Andy Corrao, Earl McPherson, Robert Welk, Herb Hawthorne, W. C. Anderson and Vern Bentley (second shift)—is tallied daily on the department "Do Good Work Scoreboard."

The scoreboard itself is mounted in the department work area on a storage rack used to hold tank assembly rings when they are not in use. Work is tallied day by day, along with the number of rejections from each crew. Weekly winners receive special recognition.

Jiggers! Withholding Perhaps Won't Cover Your '64 Tax Bill

Recent Federal tax deductions, welcome as they were, may result in some General Dynamics employees owing additional sums above those being withheld from paychecks when income tax filing time rolls around next year!

E. G. Hill, GD/Astronautics controller, provided information on this situation this week, suggesting individual employees perform their own "tax checkups" to determine if they are affected.

Congress approved tax reductions in the Revenue Act of 1964 which called for tax cuts in 1964 and again in 1965. Withholding rates are being reduced from 18 to 14 per cent over the two-year period. However, to relieve employers of having to make two withholding rate changes (one in 1964, another in 1965), it allowed a single change which will continue into 1965 and thereafter.

General Dynamics, like the vast majority of employers, made the single withholding rate change effective with first paychecks distributed in March, 1964.

This means, simply, that in SOME CASES amounts being withheld from paychecks will not be sufficient to cover tax liabilities, especially during the first year.

Employees may perform their "checkup" by using 1963 tax returns and substituting new (for 1964) tax provisions and rates shown in the accompanying table. Here's how:

First, multiply the amount withheld from a single paycheck at the old rate (January through February) by the number of paychecks received (nine weekly, five bi-weekly). Second, multiply the amount currently being withheld by the number of paychecks to be received from March through De-

(Continued on Page 2)

GD/Astro Mgt. Club Plans Dinner Dance

This Saturday (June 20) GD/Astronautics Management Club will hold its annual dinner-dance in International Room, El Cortez Hotel, with tickets at $4 per person now available from Boosters throughout GD/Astro San Diego facilities.

Dinner menu features an entree of fried chicken with a cold buffet including roast turkey and ham. Buster Carlson's band will play for dancing, and comedian Duke Art will provide intermission entertainment.

To be awarded as door prize is a trip to the New York World's Fair, consisting of round-trip air transportation for two, three nights at the New York Hilton Hotel, four Fair admission tickets, plus three guided tours of the city. Winners will pay only for meals and incidental expenses.

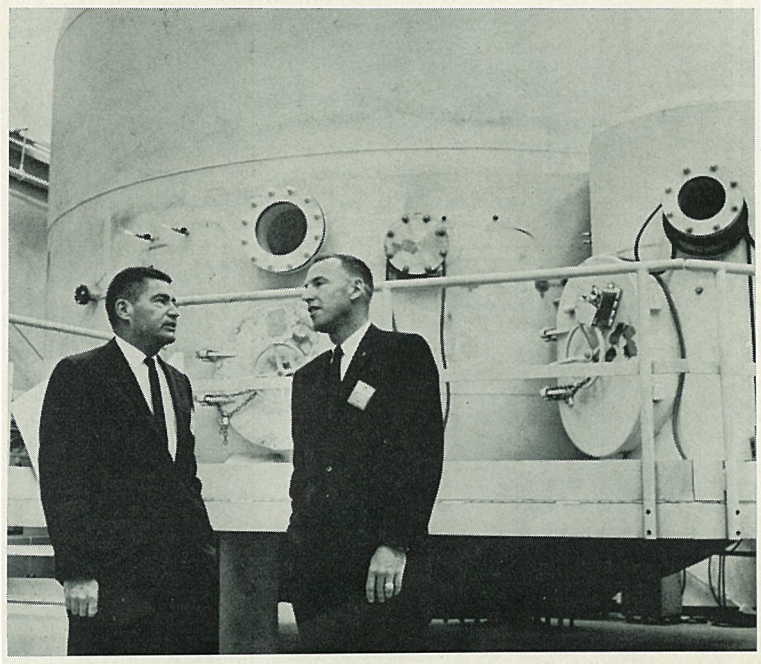
Host for the dance is the research-development and engineering department.

Discounts Available For Starlight Shows

Through auspices of San Diego Industrial Recreation Council, GD/Astro employees may purchase discount tickets for Starlight's four summer musicals at 30 per cent discount.

Free coupons, available at employee services outlets, entitle the bearer to reduced rates when exchanged for tickets at Starlight ticket offices.

Scheduled in Balboa Bowl are "Song of Norway," July 16-19, 23-26; "Wizard of Oz," Aug. 6-9, 13-16; "Sound of Music," Aug. 27-30, Sept. 3-6. Meredith Willson's "Here's Love" will be presented Sept. 29, 30, Oct. 1-5 at Fox Theater.



SPACE MAN—Astronaut James A. Lovell Jr., participant in NASA's Gemini program, is given tour of GD/Astro's extensive manned space systems facilities by D. P. Germeraad, left, during visit to division last week.

Seven From Astro Earn Law Degrees

Prolonged study after working hours has earned Bachelor of Laws degrees from University of San Diego for seven GD/Astro men.

Graduated last month were D. L. Tolman, J. D. Duddy and G. L. McMahon, all of Centaur contracts (Dept. 955-0); Fred Tschopp, Dept. 643-0; R. F. Schroeder, Dept. 015-0; W. G. Strong, Dept. 558-0; and P. A. Bergin, Dept. 033-3.

FORTY YEARS — G. L. Wilson, right, resident auditor for USAF Auditor General at Astronautics, presents certificates of service to three members of his staff, recognizing long Air Force service. From left, are C. A. Gardeen (10 years), V. W. Cooley (10 years) and P. S. Marsh (20 years).

Log Book Entries

Service Emblems

Service emblems due during the period June 16 through June 30.

Thirty-year: Dept. 670-0, L. L. Tuttle.

Twenty-five-year: Dept. 586-0, H. B. Steele.

Twenty-year: Dept. 403-1, J. R. Rogers, G. K. Smith; Dept. 501-0, R. P. White; Dept. 566-1, R. R. Lutz; Dept. 673-0, J. V. Backstrom; Dept. 718-0, C. O. Cooper; Dept. 957-0, M. L. Elliston.

Fifteen-year: Dept. 143-7, W. V. Peed; Dept. 198-0, Angela M. Venegas; Dept. 362-1, Edwin Miller.

Ten-year: Dept. 101-6, Doris A. Snell; Dept. 141-3, T. S. Brown; Dept. 142-3, Felix Casillas Jr.; Dept. 250, P. R. Ewing, Manuel Guerra, R. B. Mason, J. J. Nipper; Dept. 290-2, T. D. Wright; Dept. 319-0, J. R. Gautieri; Dept. 369-2, R. E. Ramsey; Dept. 373-1, S. F. Kozlowski.

Dept. 424-1, A. L. Earle Jr.; Dept. 452-0, D. M. Calvert, R. E. Kangas; Dept. 454-0, C. B. Adams; Dept. 532-0, C. E. Wilson; Dept. 563-1, W. G. Rhodes Jr.; Dept. 581-5, T. G. Stanberry; Dept. 583-0, S. V. Starr; Dept. 591-5, R. J. Baldwin; Dept. 682-2, Hajime Nakagawa, P. B. Van Alstine; Dept. 756-0, A. Y. Canela, Alexis Lupenko; Dept. 759-0, R. C. Gorman; Dept. 780-2, J. M. Miller; Dept. 811-0, Van Martin Jr.; Dept. 830-0, F. D. Robbins; Dept. 988-3, G. A. Hafford.

PLATTSBURGH

Ten-year: Dept. 394-3, H. E. Laird.

SYCAMORE

Fifteen-year: Dept. 976-3, G. F. McDermott Jr.

VANDENBERG

Twenty-year: Dept. 576-3, R. A. Cooper.

Papers Presented

ASTRONAUTICS

BERLAD—A. L., Dept. 596-0. "Steady State Crystallization Waves," Heat Transfer and Fluid Mechanics Institute, annual meeting, Berkeley, Calif., June 10-12.

DUKE—E. E., Dept. 528-4. "Burnout and Heat Transfer Correlations for Once-Through Superheat at Low Flow with an Exponential Source," ANS, annual meeting, Philadelphia, Pa., June 14-18.

FERRISO—C. C., Dept. 596-0. "Determination of Plume Temperature . . . Using Inflight IR Spectrometers," ONR National Infrared Information Symposium, Stanford University, June 17-19.

MANNION—R. E., Dept. 503-0. "A Survey of Gaseous Core Nuclear Rocket Engine Concepts," ANS, annual meeting, Philadelphia, Pa., June 14-18.

THOMSON—A., Dept. 596-0. "Radiation Model for the Solid Carbon Emission from Missile Plumes at Altitudes below 50 Kilometers," ONR National Infrared Information Symposium, Stanford University, June 17-19.

The following presented technical papers at the ONR/National Academy of Sciences/AFOR Molecular Spectroscopy Symposium, Columbus, Ohio, June 15-18:

FERRISO—C. C., with C. B. LUDWIG, Dept. 596-0. "Integrated Intensity Variations of the Infrared Bonds of H_2O between 300-3,000° K."

FERRISO—C. C., with J. C. BREEZE, Dept. 596-0. "Integrated Absolute Intensity Measurements of the Fundamental and the First Overtone Bonds of NO Between 1,200 and 2,000° K."

FERRISO—C. C., with M. L. STREIFF, Dept. 596-0. "An Investigation of the Slit Function of Infrared Littrow-Type Monochromators."

Deaths

PLATTSBURGH AFB

LETENDRE—Regis J., Dept. 394-3. Died May 29. Survived by wife, Sarah, and daughter, 5.

Safety Standings

Division achieving best record:

Current month: (1) Pomona division, (2) Stromberg-Carlson, (3) Electronics-Rochester. Year to date: (1) Pomona, (2) Electronics-Rochester, (3) Convair.

Division achieving best improvement:

(1) Pomona, (2) Stromberg-Carlson, (3) Electronics-Rochester.

Folk Dance Program To Include GD Pairs

Three GD/Astro men, with their wives, will take part in a program featuring folk dances of 10 European countries this weekend at Pacific Beach Junior High School.

John Hancock, Dept. 405-2; Ed Campbell, Dept. 158-1; and Bill Bonner, Dept. 102-2, will appear in "Folk Dancing Through Europe" sponsored by Cygany Dancers (club) of La Jolla. More information on the performance, admission, etc., is available from Hancock, 278-9375, or main plant, ext. 3017.

GD/Astro Daughter Wins Essay Contest

EDWARDS RS—Pat Bertacchi, daughter of Astro's P. G. Bertacchi here, has won first place in an Antelope Valley essay contest sponsored by the California Real Estate Association.

Her essay, "The Home is the Heart and Hope of the Nation," will be entered in state finals. She received a $50 U. S. Savings Bond. Pat is a junior at Antelope Valley High School.

BRIDGE CLUB CANCELS PLAY PLANNED JULY 3

Master point winners at the June 5 Astro Bridge Club session were Margaret Grindstaff-John Pitta (N-S) and Max Frank-Burton Grindstaff (E-W). No bridge meeting will be held July 3, a regular play night. Next master point event will be July 10 at ARA Clubhouse.

Births

KORTY—Daughter, Michele Elizabeth, 7 lbs., 2 oz., born April 30 to Mr. and Mrs. Charles H. Korty, Dept. 158-1.

General Dynamics NEWS

Published by General Dynamics Corporation, One Rockefeller Plaza, New York 20, N. Y.; with editorial headquarters at 3302 Pacific Highway, San Diego 12, Calif., P.O. Box 1950, telephone 296-6611, ext. 1071. Logan Jenkins, editor-in-chief.

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* * *

Affiliated editions of General Dynamics NEWS are published in Rochester, N. Y., covering GD/Electronics and Stromberg-Carlson, editorial offices, 100 Carlson Road, HUbbard 2-2200, ext. 2555. Fred E. Voss, editor; and at Groton, Conn., covering GD/Electric Boat, editorial offices at Groton, HIlltop 5-4321, ext. 300 and 513, Joseph Tracey, editor.

Electronics Inspection In New Home

One of the first stops for some 30,000 types of electronic parts and components arriving regularly at GD/Astronautics is a recently completed facility in Bldg. 5 at the main plant.

Placed in operation only a few weeks ago, this area is the new "home" of electronics receiving inspection (Dept. 143-2), a part of the division quality control function headed by L. I. Medlock, manager.

Virtually a "building-within-a-building," the 60 by 64-foot room offers a clean, controlled environment for testing and inspecting electronic components as they are received from some 4,000 suppliers.

Slight positive air pressure within the room offers an added shield against dust which might be generated in surrounding production areas, and air conditioning maintains an even 72° F. temperature.

The facility was provided as part of GD/Astro's continuing effort to insure maximum reliability in all of its products.

"Since moving into the area we have noted more consistent test results, better equipment performance, and more pleasant working conditions," said Sterling Smith, general supervisor.

The facility is laid out for orderly work flow, with specific operations assigned to given areas. Displacement and rate gyro function tests, for example, are carried out in one area; benches in another are designated for testing antennas and wave guides, and in still another for checks of tubes, diodes, transistors and similar parts.

The facility includes an enclosed, sound-proof area for vibrating equipment, and a "screen room" for radiation-sensitive parts. A two-section contamination controlled test lab for inspecting incoming pneumatic and hydraulic units is conveniently adjacent.

Dept. 143-2 includes about 45 receiving electronics inspectors, reporting to Supervisor R. L. Sattro, and C. L. Marks, assistant supervisor. W. C. Hovey is in charge of second shift operations.

Help Solicited To Cut Utilities

Utility bills cost Astronautics over $1 million each year. Can you help reduce them?

Simple things help: keep doors to air conditioned areas closed at all times; turn off machines not in use; report water and compressed air leaks promptly; turn off lights in areas not in use, etc.

Trivial?

"Not at all," says W. J. Stanley, manager of plant engineering. "Especially when you multiply the action a hundred or a thousand times."

Stanley has guided a division-wide utilities economy program over the past 22 months that has reduced costs by $325,000. He attributes a healthy share of this saving to individuals performing such services. He feels that still more savings are possible if employees care enough to help.

Plant engineering would also like to lend a hand to employees desiring to offer utilities saving ideas through such programs as Employee Suggestion or Cost Improvement Proposals. Utilities include electricity, water, heating and air conditioning. Employees seeking help in computing possible savings for their ideas are invited to contact Joseph Dragonetti at ext. 4280.

AUDITORS INSTALL TWO ASTRO MEN

Two GD/Astro men were recently installed as officers of San Diego chapter, Institute of Internal Auditors. Raymond E. Carlson, manager of division internal audit, is new president, and Robert K. Jeffries of division audit staff is treasurer.

Jiggers! Withholding Perhaps Won't Cover Your '64 Tax Bill

(Continued from Page 1)

cember (44 weekly, 22 bi-weekly). Add the two amounts. Consult the accompanying table for your tax rate.

If the amount to be withheld for the year is smaller than your estimated tax liability, you may wish to take steps to have Astronautics withhold additional amounts for the balance of the year to offset the difference.

Recommended method is to reduce the number of withholding exemptions claimed. This is possible by instituting Form W-4. (Each exemption dropped will increase the amount of tax being withheld by approximately $1.80 per week.)

Employees with special problems may contact the controller function.

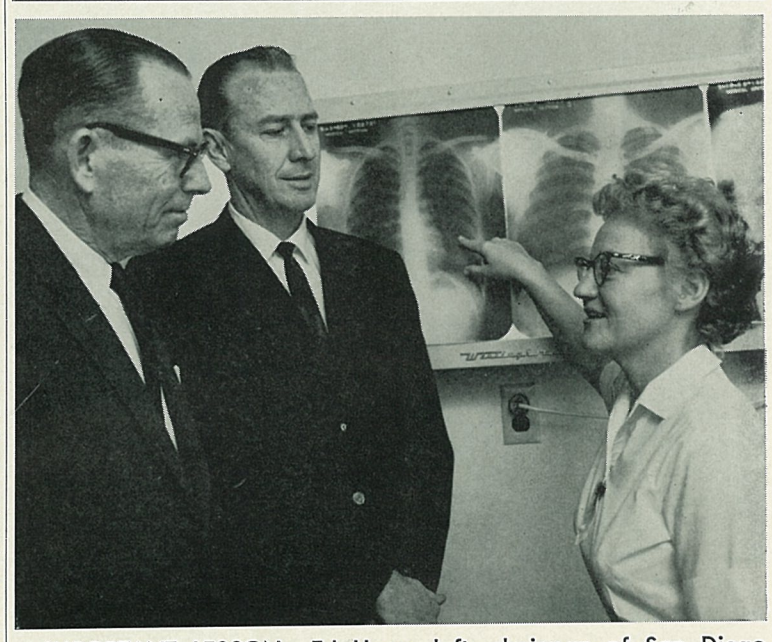
MARRIED TAXPAYERS FILING JOINT RETURNS*

Net Taxable Income**

Over	But Not Over		Of excess over—
$ 1,000	—$ 2,000	$ 160, plus 16.5%	—$ 1,000
$ 2,000	—$ 3,000	$ 325, plus 17.5%	—$ 2,000
$ 3,000	—$ 4,000	$ 500, plus 18%	—$ 3,000
$ 4,000	—$ 8,000	$ 680, plus 20%	—$ 4,000
$ 8,000	—$12,000	$1,480, plus 23.5%	—$ 8,000
$12,000	—$16,000	$2,420, plus 27%	—$12,000
$16,000	—$20,000	$3,500, plus 30.5%	—$16,000

* Tax rates for single taxpayers and married persons filing separate returns are considerably higher. Tax schedules covering this group, plus others, are available through local Internal Revenue Service offices.

** Net Taxable Income is amount subject to taxation after exemptions and deductions have been claimed.



IMPORTANT LESSON—Ed Hope, left, chairman of San Diego Cancer Crusade, receives explanation of X-ray use in cancer detection from Ardelle Sorkness, right, of GD/Astro's central medical, while visiting plant to accept $7,500 gift for Cancer Society. J. R. Mitchell, center, presented check on behalf of Employees' Con-Trib-Club.

Con-Trib Issues Interim Report

Between Oct. 1, 1963, and March 15, GD/Astro Employees' Con-Trib-Club granted funds as indicated to charitable organizations, and to GD/Astro employees through its Emergency Aid Fund.

CHARITY FUND

United Community Services	$176,679.68
Salvation Army - Christmas Party	3,000.00
Chula Vista Schools Sixth Grade Camps	46.00
Sunnyside Guild Inc.	1,000.00
San Diego City Schools Sixth Grade Camps	500.00
Arthritis & Rheumatism Foundation	500.00
San Dieguito Family Services Association	500.00
Synanon Foundation	1,000.00
San Diego County Heart Association	7,500.00
La Mesa-Spring Valley Schools Sixth Grade Camps	150.00
Tuberculosis & Health Association of San Diego County	350.00
Big Brothers of San Diego	1,500.00
Mesa Vista Hospital	625.00
TOTAL	$193,350.68

EMERGENCY AID

Total amount granted	$31,073.56
Average aid per case	220.38
Number of cases aided	141

GD/Astronautics Motion Picture Section Honored For Production of 'The Voyagers'

First place honors among public information films entered in national Industrial Film Producers Association (IFPA) competition have been accorded to "The Voyagers," produced by GD/Astro motion pictures and television (Dept. 124).

This is the third IFPA first place award to be won by the Astro group under Manager John Hynd.

"The Voyagers" is a 28-minute color production designed for television use in engineering recruiting.

President J. R. Dempsey was also honored by IFP, with a special award citing him for creating an atmosphere conducive to the production of effective industrial motion pictures at GD/Astro. This award was accepted on Dempsey's behalf by C. T. Newton, director of communication.

TUNING IN — Transistor radio gets once over and coffeemaker waits its turn during farewell party for V. L. "Vic" Allwardt, prior to his recent transfer from Edwards RS to GD/Fort Worth. Astro friends stand in background. All 61 Astro employees at Edwards RS turned out for affair.

Can it Hear a Noise? Or Make One? Then GD/E-Roch. 'Listening'

(On this page is another in a continuing series of articles describing history and products of General Dynamics divisions.)

General Dynamics/Electronics-Rochester is primarily concerned with electronic communications—in the broadest sense.

From satellite tracking equipment to electric eels, from military multi-channel single sideband radio to sound and music distribution systems for schools, from speech compression to anti-submarine warfare devices—and with many stops in between, GD/E-Rochester is interested in everything that makes a noise, hears a noise, or records and transmits information.

A full-grown and important division of General Dynamics, GD/E-Rochester has a short history and a distinguished ancestry.

Separated from the parent Stromberg-Carlson division in September, 1961, the new division consolidated its operations and continued physical location at the Electronics Center plant, which Stromberg-Carlson began to occupy in late 1956 following purchase of the 800,000-sq.-ft. plant from Bond Clothes, Inc.

CAFETERIA AS BIG AS POLO FIELD

This facility, facetiously termed "the pants factory" by the first group of engineers to move in from their crowded quarters at the old Carlson Road plant of S-C, provided welcome breathing space. The cafeteria alone had an area of 39,000 sq. ft.—almost big enough for a polo field—and the main corridors throughout the building were, and are, 16 feet wide. The cafeteria has since been subdivided into office units, with still enough seating for 500 at a shift.

More than four years elapsed before the operations at Electronics Center became a functioning and "free-standing" division of the Corporation. During this period, the general trend of operations was toward military electronics, though several other product lines had their day before being transferred to other locations or discontinued. Digimatic, (taped control of machine operations), Pagemaster (a wireless selective individual paging system), and auto radio were sold and the hi-fi business discontinued.

DIVISION FORMED IN AUGUST, 1961

Net result was that the Electronics division, as set up on Aug. 30, 1961, by Charles F. Horne was geared to making a fair profit in military and industrial communications/electronics. Horne served for more than a year (until November of 1962) as president of this division while continuing as president of GD/Pomona.

Even before 1961, a number of physical changes — aside from carving up the cavernous cafeteria — took place.

By the first of August, 1959, the Rochester Products Division of General Motors moved out of 55,000 square feet of space, on a lease inherited from Bond Clothes. A year later the Bond retail store, located in the front ground floor area, moved out, finally giving the division use of the entire building.

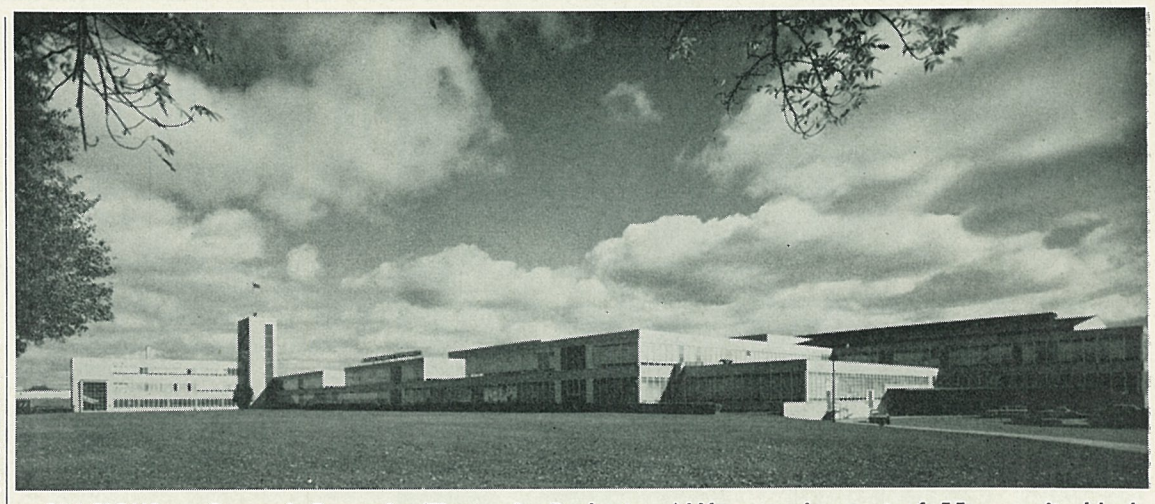
Another facility — the indoor sonar tank, a half-million gallon "bath-tub," 40 feet in diameter and 30 feet deep, was built in 1958. At that time it was the largest such facility in the free world.

DIAL-X intercommunicating and battle announce systems built at Electronics Center were installed in the first of the Polaris-carrying nuclear submarines in 1959. All subsequent Polaris submarines have been similarly equipped.

SINGLE SIDEBAND RADIO POPULAR

Company-sponsored development of single sideband radio, accepted first by the U. S. Air Force, was the forerunner of a contract for the Navy in 1959 for two engineering test models. In June, 1960, the division received a U. S. Army Signal Corps contract for single sideband, followed by another contract from the Air Force in 1961, making the division an important supplier of this type of equipment to all three branches of the armed forces. During the same period, other types of radio equipment for the military were developed, such as a portable intracom unit for missile sites, remote control for radio, and a number of experimental projects.

In late 1961 a specially modified 165-foot barge christened "Darius" moved into position on Seneca Lake to serve as a maneuverable floating laboratory for studying underwater sound. The Darius and its dock on the west side of the lake comprise the SUTEC (Senaca Underwater Test and Evaluation Center) facility. Completely instrumented and equipped with a winched A-frame of some 35 tons capacity, the Darius spends most of its time moored in the middle of 600-foot deep (and ice-free) Seneca Lake, where transducers can be studied and tested under conditions quite similar to those in the ocean.



SPACIOUS — General Dynamics/Electronics-Rochester, N.Y., occupies part of 55-acre city block. Present population of plant is about 3,500.

Increased emphasis on the industrial products operation showed, with shipment in early 1962 of nine more DIAL-X intercommunication systems for Polaris-firing nuclear submarines. These were the first of more than 40 such systems with which all submarines of this class are equipped. Radio intercommunication equipment for the Titan missile bases came along at the same time, in connection with Stromberg-Carlson's responsibilities for a complete communication system. Initial production of sonobuoys began at this time, a forerunner of important continuing business in the anti-submarine warfare field.

A long-term highly classified reconnaissance program with the Air Force continues to be one of the division's major efforts. Likewise more recently, the ground support program for the famed F-111 plane occupies prime attention.

Pattern recognition and speech-compression development, biophysical studies of electric fish communication, data communication, and ocean current measurement are other examples of diverse activity. LASER and thin film research is a prime interest of division scientists.

During 1962 the SUTEC facility became operative. This valuable addition to the company's capability in undersea research and testing also became available for outside contract work.

MANAGEMENT CLUB ORGANIZED

Spare-time employee activities also showed healthy growth during this time. The Electronics Recreation Association came into being as an independent divisional organization. Its first big picnic in the summer of 1962 encouraged ventures in other areas including dances, athletics, out-of-town group trips, etc. A local club of the National Management Association also was organized and has prospered. It currently is sponsoring a youth business program in cooperation with the Rochester Junior Chamber of Commerce.

The division is now at its peak in employment, with approximately 3,500 employees. As would be expected in a company with such highly specialized and complex products, the ratio of engineers, scientists, and support personnel to others is exceptionally high.

Under the leadership of Richard A. Wilson, who came to General Dynamics/Electronics in November, 1962, and became president in January, 1963, the division has gone steadily forward and is now at an all-time high point in both volume and backlog of business for the future.

Profitable operations were achieved in 1962 and 1963, and the division looks forward to continued improvement in operations in 1964 and 1965.

GD/E-Rochester Products

MILITARY PRODUCTS

Radio communications — single sideband receivers, transmitters and power supplies; digital communication receivers, complete transportable communication systems, and other associated devices and components.

Aerospace ground equipment — automatic or semi-automatic test equipment to check any electronic equipment destined for operation above, below, on, or beyond the earth's surface and atmosphere.

Space electronics/navigation — electronic systems and subsystems for unmanned satellites, space probes, and manned spacecraft; also electronic navigation systems (ground, ship, or air) and allied equipment.

Reconnaissance/countermeasures — radar, reconnaissance equipment, and ECM equipment.

Anti-submarine warfare — airborne, ship, submarine, and ocean-bottom equipment, such as sonobuoys and receivers, transducers, undersea beacons, designed specifically for undersea warfare.

Data communications — special purpose computers, data transmission systems, data acquisition and logging systems.

INDUSTRIAL PRODUCTS

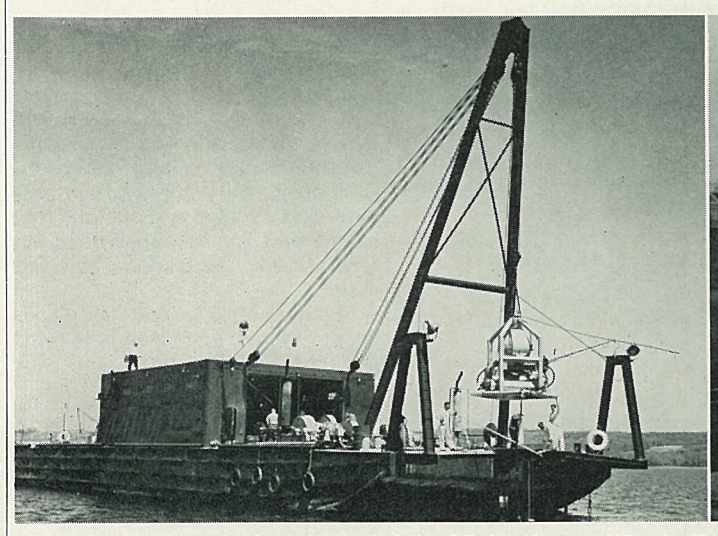
Sound and music distribution systems for both indoor and outdoor use, in factories, auditoriums, institutions, and the like.

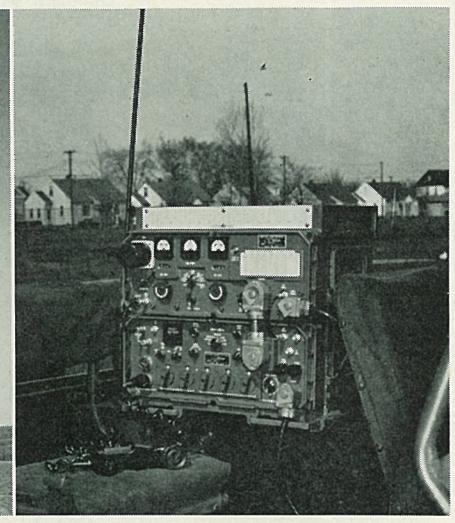
Custom engineered line of program and intercommunicating systems for schools.

Nurse-patient communication systems and doctors' registry systems for hospitals and nursing homes.

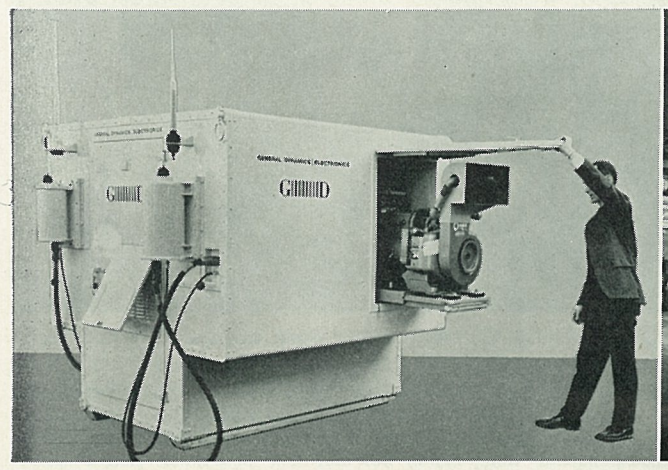
Fire alarm systems for business, industry, and institutions.

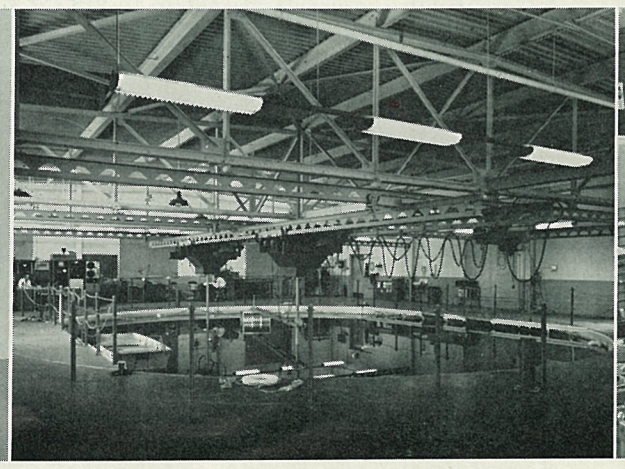
Private dial telephone systems, as used for both industry and military, such as the DIAL-X systems on all Polaris type nuclear submarines.

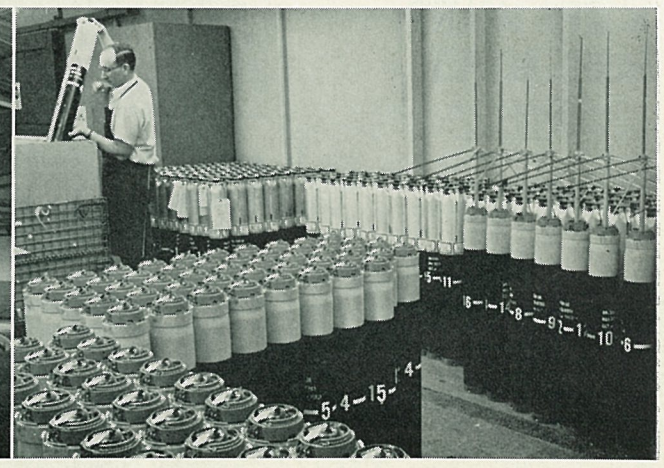




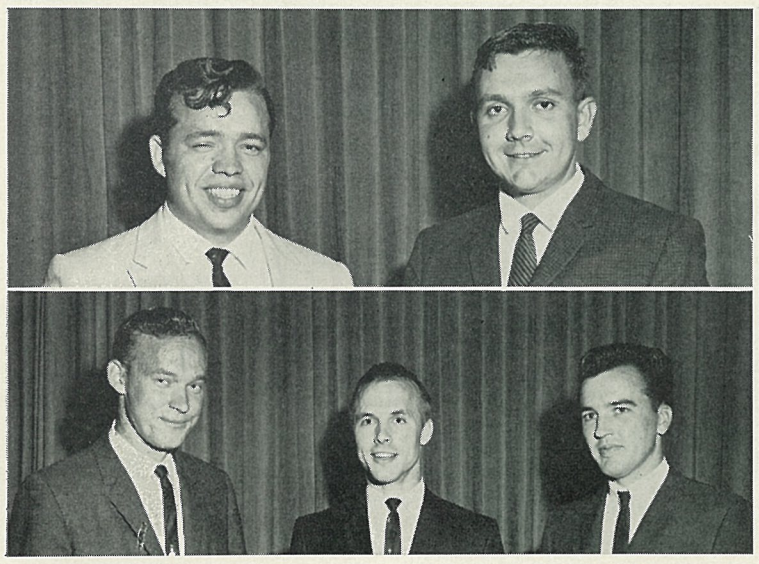
AT SEA AND ASHORE — At left is GD/E's barge "Darius" on Seneca Lake, used in undersea research. At right is early version of division's AN/GRC-106 single sideback radio, jeep-mounted, rugged, powerful.







At left is new "Intra-Power" unit which houses complete radio communication system, isolated air-cooled engine and generator. Center: 450,000-gallon sonar tank with bank of recording equipment. Right: sonobuoys are steady product at GD/Electronics-Rochester.



GRADUATES — Above are some of nine Convair and Astro apprentices receiving certificates at annual completion ceremony June 4. In upper shot are Gordon Hook and Al Carlson of Astro. Lower photo shows Chester Reinys, Raymond Wyborny, James Bridgman of Convair.

Convair and Astro Apprentices In Graduating Class of 200

Four Convair and five Astronautics apprentices were among the some 200 San Diego young men honored at the 23rd annual Apprenticeship Completion Ceremony June 4 in El Cortez Hotel's International Room.

The dinner and ceremony, which rewards all apprentices completing their training from August of last year to August of this, was sponsored by the San Diego General Apprenticeship Committee jointly with SD Junior Colleges, State of California Division of Apprenticeship Standards, U. S. Dept. of Labor, Bureau of Apprenticeship and Training and individual trade committees.

Dr. John Dunn, president of Palomar College, delivered the graduating address to the San Diego apprentices.

Only General Dynamics member of the Joint Apprenticeship Committee to receive a meritorious service certificate was Walter T. Herchold of Astro, who has spent five years on the committee.

Graduating apprentices from Convair were Chester Reinys, Raymond Wyborny, James Bridgman, John Smith, all taking their four-year training in electronics.

Those from Astro were Gordon Hook and Steven Miller, machinist; A. A. Carlson, plastic plaster patternmaker; James Carter and William Shoemaker, tool and die.

H. W. Rubottom, in charge of Convair educational services, and Jack Croft, Astro chief of educational services, both represent their divisions on the Joint Apprenticeship Committee. William Stewart is Astro apprenticeship coordinator and Wayne Turner, Convair coordinator for the training program.

100 Will Take Spanish Class

A capacity crowd of General Dynamics people jammed the opening session of CRA-ARA's "tourist" Spanish course last week in the Convair executive dining room and viewed a slide travelogue of "Mexico — 1963," last summer's group tour.

Over 100 signed for the 12-week course in basic and practical Spanish which will culminate again this year in the annual GD trip to Mexico. Jim Hardison of GD/Convair, instructor of the Spanish classes, conducts the tour for GD travelers.

A special meeting to discuss details of the two-week journey will be held Monday (June 29) at 6:30 p.m. in Convair executive dining room, Pacific Hwy.

The de luxe tour, by air conditioned train, will be from Aug. 21 to Sept. 6. Price for transportation, hotel accommodations, sightseeing, two meals a day is $360 per person.

Hardison may be reached evenings at his home phone, 276-5805, for full information.

Anyone interested in the Spanish classes may still enter by attending sessions on Monday evenings, 7-9 p.m., in the dining room location. Students do not have to sign for the Mexican trip to be eligible for the language course.

JOSEPH MOLTER EARNS DEGREE

One of the most "senior" seniors to be graduated by California Western University this term is GD/Astro's Joseph J. Molter, calibration technician in Dept. 142-2.

Molter, 58, retired from Navy service in 1956, and joined GD/Astro. He enrolled at Cal Western in 1959 and completed all his college work in night classes, earning a bachelor's degree in industrial management.

Participation in GD/Astro's tuition refund program has "sold" Molter on the merits of higher education: he will work toward a master's degree.

Trapshoot Pot Grows to $150

The kitty is still growing in CRA Gun Club's Troy trapshooting matches.

Everyone tried, but not a single contestant was able to hit 50 straight at the May 31 shoot, leaving the big prize of well over $100 unclaimed.

Pool for the next Troy shoot stands now at $150, plus that day's share of entry fees, as grand prize for perfect score in the combined 16-yd. and handicap events.

Of the 19 who turned out on Memorial weekend, the two high-scorers were Bill Shrode of Fallbrook and L. P. Johnson of Chula Vista. They both knocked down 24s in 16-yd. and the same in the handicap to tie at 48. Each drew $7.25 in prize money.

Shooters will have another crack at the big money July 5.

Next open shoot at Gillespie Field Gun Range will be an ATA registered trapshoot Sunday (June 28).

The registered skeet shoot set for June 21 has been cancelled because of a conflict with the Mullenix shoot the same day at Miramar NAS Range.

ASQC Will Install Officers at Dinner

Three General Dynamics men will be installed as officers of San Diego section, American Society for Quality Control (ASQC) at a dinner dance at Point Loma Inn, July 25.

They are GD/Convair's L. C. Stuckey, chairman, and L. I. Frederickson and H. H. Mishler of GD/Astro as vice chairman and secretary. Tickets are available from ASQC boosters at both divisions.

AIAA Conference To Hear GD Men

General Dynamics specialists from four divisions will give technical papers at the first annual meeting of the American Institute of Aeronautics and Astronautics (AIAA) in Washington, D. C., June 29-July 2.

Latest technical advances in every area of the aerospace field will be discussed at the meeting which is expected to draw 5,000 professional flight scientists and engineers from all parts of the country.

Dr. Hugh L. Dryden, Deputy Administrator of NASA; Prof. Courtland D. Perkins, AIAA president; Robert C. Seamans, Associate Administrator of NASA; Eugene G. Fubini, Assistant Secretary of Defense—Research and Engineering; Najeeb Halaby, FAA Administrator, will be featured speakers.

General Dynamics people on the program are, from GD/Astronautics — Grant L. Hansen, Bernard D. Newson, Kaye F. Nelson, Wendell J. Lomnicky, J. F. Haskins, J. L. Percy Jr., M. Griggs, John A. Fager, H. D. Girouard, J. A. L. Thompson, L. D'Attore, F. P. Boynton, Paul E. Wilson, Edward E. Spier, G. D. Magnuson, A. W. McReynolds, H. G. Arrendale, R. G. Rose, R. D. Harris.

GD/Convair — Torstein Strand, A. C. Conolly; GD/Electric Boat—Joseph A. Lubitz, Richard J. Benoit, Harold Wallman, Thelma E. Adamson, H. E. Sheets, R. R. Loughman; GD/Fort Worth, E. B. Maske.

Son of Orien Reed Earns Scholarship

CAPE KENNEDY—A three-year Navy ROTC scholarship has been given to the son of an Astronautics test conductor here.

He is Donald Reed, 18, son of Complex 12 test conductor Orien Reed.

A freshman at Georgia Tech, young Reed will study under his scholarship at Auburn University. He is currently taking part in a two-month summer cruise with the Naval Reserve. An electrical engineering student, Reed is slated for a commission in the Navy Reserve following his studies.

Unusual Instrument Slated For Meeting

A rare musical instrument—the electronic accordion—will be featured at the meeting of Hi-Fi/Music Club, 7:30 p.m., June 24 in ARA Clubhouse, with Larry Brache performing.

At its July 14 meeting, the group will hold a swap meet for exchange of stereo components, test equipment and tools.

Salvage Schedule

Convair salvage yard at Plant 1 will be open this coming Saturday (June 20) for employee sales from 8 a.m. until noon.

The yard will be closed on July 4 during the holiday weekend.

Next sales day at the Astro salvage yard at Kearny Mesa is July 11.

ASTRO'S LEHMAN PASSES BAR EXAM

Peter C. Lehman, a member of Astronautics' organization planning staff of management systems (Dept. 150-0) was notified recently of having successfully passed the California State Bar examinations. Lehman holds a BS degree from Georgetown University and LLB degree from the School of Law, University of San Diego.

PROGRAMMED INSTRUCTION CHAPTER MEETS JUNE 25

San Diego Chapter of the National Society for Programmed Instruction will hold its regular monthly meeting next Thursday (June 25), said Griff Williams of GD/Convair, chapter president. Meeting will be at 7:30 p.m. in Convair cafeteria, Pacific Hwy.

Naval Reserve Officer School Involves Scores of Dynamics Men

Nearly half-a-hundred General Dynamics men will be among current term graduates or faculty members of Naval Reserve Officers School (NROS 11-2) when informal concluding ceremonies are held next week.

All are U. S. Naval Reserve officers who earn both promotion and federal service retirement credit by regular participation in the school's weekly two-hour classes in a variety of college-level subjects.

Speaker at graduation ceremonies will be VAdm. J. B. Colwell. Now Pacific Amphibious Force commander, Adm. Colwell is a naval ordnance specialist who has served as assistant experimental officer, Naval Proving Ground; deputy director of the Polaris project; and as senior naval assistant to director, defense research and engineering, Office of the Secretary of Defense.

During the current term, NROS operations included 16 courses taught at five San Diego-area locations, and ranging from Industrial Management to National Strategy.

Ross A. Evans, GD/Astro manager of personnel administration, is the school's executive officer, and the faculty includes J. H. Johnson, director of management systems; R. G. Stoklosa, E. W. Thurston Jr., and R. G. Wilson of GD/Astro; George Schnurrer of General Atomic.

GD/Astro students include:

J. G. Helleis, W. G. Michael, J. T. Ratajkowski, J. T. Lane, F. B. Van Valkenburgh, A. C. Walker, G. J. Bartolomei, L. E. Bennett, D. K. Callow, G. F. Chandler, G. L. Ebner, E. L. Fitzgibbons, E. P. Ford, H. D. Fyffe, J. V. Gallagher, T. M. Gammage, A. C. Gates, R. C. George.

D. P. Germeraad, R. F. Kalal, W. A. Miller Jr., J. R. Mitchell, L. H. Newbrough, H. L. Obertreis, W. Pfefferle, W. W. Stiers, R. K. Strowmatt, J. W. Vega, B. Weinbaum.

Taking part from GD/Convair are T. L. Lague, W. H. Bond, J. E. Foster, A. R. Hermann, G. A. Howell, E. H. Price Jr., J. W. Redfield, R. A. Tulk.

GD/Electronics-San Diego is represented by R. F. Schillinger.

Top Executives Speak June 23

Four top Astronautics executives will be key speakers at a June 23 "Astronautics Night" staged by San Diego Chapter, American Institute of Aeronautics and Astronautics.

The affair, to be held at El Cortez Hotel's Caribbean Room, is open to the public with tickets available at the door. Dinner is at 7:30 p.m.

R. C. Sebold, Astro vice president-research, development and engineering, will discuss "Astronautics' History, Accomplishments, Centaur Status and Overall Future." C. S. Ames, vice president and program director—SLV, will discuss "SLV Status and Future (FLOX)." Frank Zylius will discuss "MOL Status and Management Techniques." K. J. Bossart, technical director, will speak on "Several Basic Research Studies."

David H. Garber, Astro senior research scientist, is president of the local AIAA chapter.

Free Skating Party Scheduled at Plaza

To introduce prospective members to General Dynamics Ice Skating Club, the group will hold a free skating party at Mission Valley Ice Plaza, June 25.

GD/Astro, GD/Convair and GD/E folk may enjoy "private party" skating from 6:30 to 8 p.m., then continue skating until 10:30. Only cost is 35 cents for skate rental, if required. Refreshments are free.

A club membership booth will be set up at the rink to provide information on group activities. Currently, the club holds a private skating party, including free instruction for beginners and intermediates, each Thursday at 6:30.

Membership costs $1 per family per year, and members now pay half-price rates for the Thursday sessions.

Garden Show 'Family Affair'

General Dynamics Garden Club's summer show will be a "family affair" when the annual event is held next month for the first time in ARA Clubhouse east of GD/Astro's main plant.

Scheduled July 25 and 26, entries are being solicited from all GD/Astro, GD/Convair and GD/E employees and their families. Commissioner Everett Henderson said employees of GD/Pomona and General Atomic will also be invited to enter.

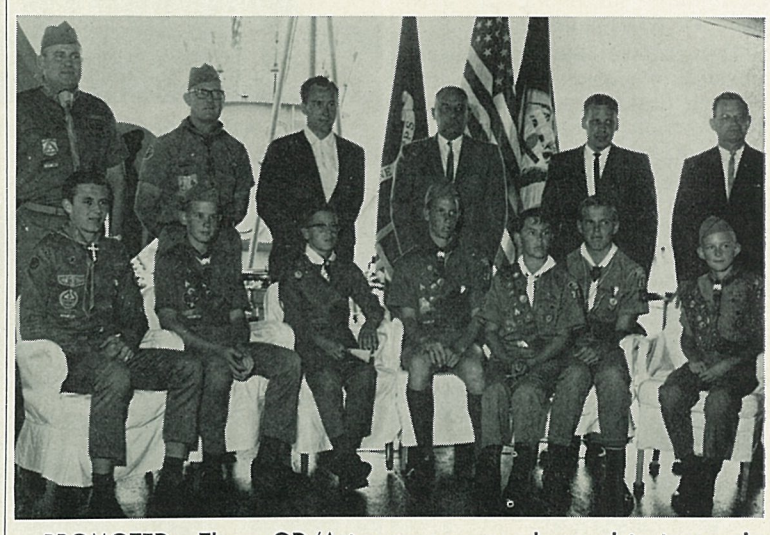
The show will feature 49 classes for dahlias, four citrus and deciduous fruit classes, eight classes for vegetables, 14 arrangement and corsage classes and two children's categories.

Diesen and Brending Speak on Computers

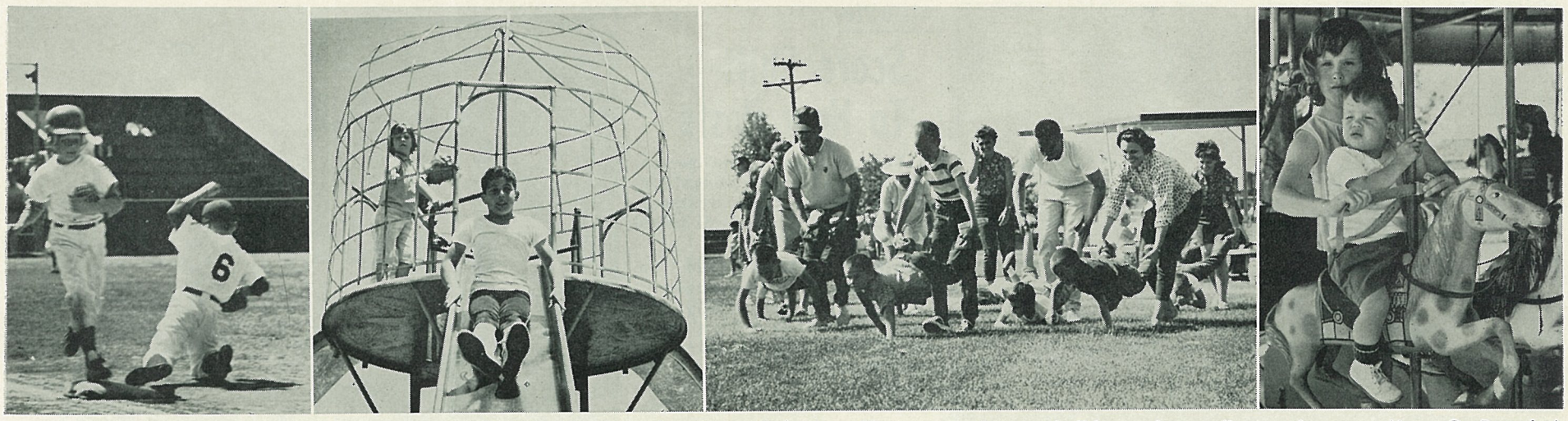
Carl Diesen, GD/Astro manager of scientific programming and analysis, and Dennis O. Brending, requirements engineer at GD/Electronics-SD, were speakers this month at a meeting of American Public Works Association, San Diego and Imperial Counties chapter.

Theme of their presentations was "What's New in Computer Techniques for Management and Engineering."

Diesen discussed the general scope of computer techniques and their application in engineering and administration, while Brending dealt with specific applications, including automatic drafting equipment.



PROMOTED—These GD/Astro sons were advanced to top ranks in Scouting in recent Court of Recognition held aboard USS Saint Paul. Pictured with their fathers are (from left) Thomas Werts, son of Al Werts, Dept. 130-1, and Warren Kolar, son of George Kolar, Dept. 142-2, advanced to Eagle; Gregg Wilson, son of Jim Wilson, Dept. 959-0, Alan Dunlap, son of Maurice Dunlap, Dept. 526-6, Dan and Jim Greenwald, sons of James Greenwald, Dept. 191-0, new Life Scouts; and John Miller, son of Jim Miller, Dept. 522-5, Star Scout. GD/Astro's Charles Tyler, Dept. 158-1, is advancement committee chairman for Balboa district.



FOR THE PICNICKERS — ARA area offers many facilities for Astro families and departments planning summer picnics. Emphasis is upon play equipment for children. There are swings and slides and a wading pool, even a Merry-Go-Round. A concession stand offers soft drinks and snacks at moderate prices.

Sports & Recreation

Astro Wives' Club Seeks New Members For Variety of Social, Educational Activities

Astro Wives' Club will hold an informal "gourmet potluck" luncheon at 10:30 a.m., June 24 in ARA Clubhouse, with all employees' wives welcome to attend.

The group has organized a recipe exchange, and plans to produce an "Astro Wives' Cookbook." Each meeting—the fourth Wednesday of each month—features a program and a door prize is presented.

Club dues are $2 per year, and may be paid to Evelyn (Mrs. Kenneth) Morefield, membership chairman, 3625 Morlan St., San Diego.

The group now plans an excursion to the Laguna Art Festival Aug. 9. Included in a $4 package price are bus transportation and a ticket for "Pageant of the Masters." Only 41 seats are available, and reservations should be made early with Maxine (Mrs. John R.) Stussy, 454-5805.

At the club's meeting this morning (June 17) the program featured a tour of ARA facilities, "Sew and Show" fashion show, and a sewing contest with participants Betty Becker, Cay Redlein, Ethel Birgelaitis, Robbie DeVeau, Velma Baldwin, Opal Discher, Margaret Brock, Fran Thompson, Lucile Garlington, Madge Buehner and Lou Nordeck.

ARA Art Room Adds Ceramics Work June 30

Ceramics instruction in ARA's new Clubhouse art room will begin June 30, with qualified instructors on hand each Tuesday and Thursday, 10 a.m. until 1 p.m., and again from 7 to 10 p.m.

The art room is stocked with greenware and miscellaneous items necessary to the ceramics operation, and these materials will be sold to GD/Astro employees and dependents at discount prices.

The facility is equipped with two kilns—a large eight-foot kiln, and a smaller one of two and one-half-foot capacity—in which instructors will fire finished greenware for a modest fee.

Prospective participants have been invited to visit the facility during operating hours June 30 to inspect equipment and learn more about the ceramics program.

Open to All

Sculpture Club In Operation

Rapidly growing among ARA activities is the Sculpture Club recently organized and directed by Commissioner Francis Pall, Dept. 734-1.

Meeting every Monday at 7:30 p.m. in the new art room in ARA Clubhouse, the group has attracted both beginning and advanced sculptors to its ranks.

For each member, ARA provides a modern modeling stand, and an individual storage locker for materials and work in progress. Some members already have models ready for "firing" into terra cotta, while others are fashioning sculpturing tools adapted to individual needs.

Once work has been fired, it is either glazed, or given a metallic patina. Models can remain in these forms, or may later be cased in metal.

Future club activities will include modeling from life, exhibitions and intra-club competition.

Pall has issued a standing invitation to all GD/Astro employees and their families to visit the art room any Monday evening.

Astro Rockets List Season's Schedule

Astro Rockets, ARA representative softball team, meets a Drasin Knitting Mills team of Burbank in an exhibition contest at 8 p.m., June 27 at ARA Field.

Rockets are currently battling for the lead in the San Diego Open Softball League, in games played every Monday and Thursday at Helix High. A make-up game is scheduled at ARA Field Friday (June 19).

Softball fans have been invited to attend the team's games. In up-coming contest Rockets meet Ralph's Hawks, 8 p.m., June 18, Helix; Tamale Kings, 8 p.m., June 19, ARA Field, and again 8 p.m., June 22, Helix; SubFlot One, 8:40 p.m., June 25, Helix; Ralph's Hawks, 8:40 p.m., June 29, Helix.

Astro Lens to Feature Make-Up Program

An unusual opportunity for photographers to record progressive make-up steps as models are prepared for stage characterizations will come at the June 21 Astro Lens meeting set for 7 p.m. in Photo Arts Bldg., Balboa Park.

John Murphy (Dept. 521-6), member of the Society of Make-up Artists and Old Globe and Starlight make-up veteran, will present a special program. He will create stage characters utilizing attractive models.

Opening the meeting will be a movie on Greece.

DISCOUNT AVAILABLE FOR 'MAD, MAD WORLD'

Discount tickets to the June 28 showing of "It's a Mad, Mad, Mad, Mad World," at Capri Theater are still available at GD/Astro employee services outlets. Purchasers realize a saving of 50¢.

Here's How to Plan Departmental Picnic

To plan a picnic in the Recreation Area, GD/Astro departments need only to select a date, choose between entrees of barbecued beef or chicken, and determine how many persons will be served.

With this information, the ARA Picnic Coordinator will reserve necessary picnic and recreation facilities, and arrange catering service. A recreation specialist will arrange and direct games and contests for youngsters and provide each with free ice cream and a free ride on the ARA burros and Merry-Go-Round during the picnic.

ARA will furnish prizes for winners of children's games and awards for adult contests.

ARA Calendar

(GD/Astronautics Recreation Association has some 40 activities in operation for employees. For information, call ARA Headquarters, ext. 1111).

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AMATEUR RADIO—Club preparing for ARRL Field Day, June 27, 28. Information from John Creamer, Plant 19, ext. 1261.

ASTRO LENS—Make-up featured at meeting, June 21, 7 p.m., Photo Arts Bldg., Balboa Park.

CERAMICS — Instruction sessions, Tuesdays and Thursdays, 10 a.m. to 1 p.m., 7 to 10:30 p.m. in art room, ARA Clubhouse beginning June 30.

COINEERS — Meeting tonight (June 17), 7:30 in ARA Clubhouse. Auction.

DEL MAR FAIR — Discount tickets (25 cents off) available at employee services outlets for Fair, June 26-July 5.

GOLF — Starting times for Torrey Pines tourney July 11, 12 available from ARA Headquarters, ext. 1111, June 22 through July 2.

GUNS—Registered ATA trapshoot, June 28, Gillespie Field. Registered skeet shoot scheduled June 21 has been cancelled. Troy trapshoot, July 5.

MODELING — Informal model building sessions each Saturday, 9 a.m. to 4 p.m., ARA Clubhouse. Free.

SPANISH — Registration still open for 12-week course Mondays, 7-9 p.m., Convair executive dining room. Meeting to explain Mexican tour June 29, 6:30 p.m., also in dining room, Pacific Hwy.

WIVES' CLUB—Meeting June 24 in ARA Clubhouse. Program includes "Elementary Facts for New Investors" at 12:30 p.m., plus instruction on making a "Discovery Hat," for those bringing two 1½-yard pieces of contrasting 36-inch material.

NATIONAL ASSOCIATION NAMES J. R. MITCHELL

J. R. Mitchell, GD/Astro chief of employee services, was named a director of National Industrial Recreation Association at the organization's national conference in Cleveland, Ohio, last month.

ARA Area Facilities Ideal For Dept. Picnics

With the Fourth of July weekend about to herald arrival of the summer picnic season, GD/Astronautics Recreation Association (ARA) has announced a new "package" arrangement especially designed to accommodate departmental "get-togethers."

The ARA Area has reached another high point in its continuing development, and more and more GD/Astro folk are utilizing the extensive picnic and recreation facilities for group parties as well as for family-type gatherings.

Except for the Merry-Go-Round (a real one, with old-time band organ accompaniment), burro rides and horse rental, for which small admission fees are charged, the Recreation Area's attractions are free.

There are swings, slides and a variety of children's play equipment, a real Air Force fighter plane for "make believe" pilots, and a wading pool in Polynesian motif.

Adults will find tennis and shuffleboard courts, ball parks, horseshoe pitching, and—for those who simply want to relax—plenty of lawn and shade trees for casual lounging.

A concession stand offers soft drinks, beer, hamburgers and hot dogs, and other snacks at popular prices.

The picnic program for departments is designed to make it as easy as possible for employees of any department to arrange an off-the-job social gathering with their families in an informal atmosphere.

Chess Club Slates Play, Family Picnic

ARA Chess Club will hold a "Chess for Fun" tourney and picnic starting at 1 p.m., June 21 in the Recreation Area, with all GD/Astro chess fans and their families welcome to attend.

Last month Astro defeated the combined efforts of Escondido and Balboa Chess Clubs with an 8 to 5 score, with Art Munson, Bud Fagan, Jerry Daniels, Dave Cochrane, Ken Jones, Steve Balogh, John McKiennon, and Roy Gilbert scoring for ARA.

Munson, Fagan, Daniels and Bob Goodwin also scored victories against expert A. P. Coles III, who played 15 games simultaneously against Chess Club members.

RADIO 'HAMS' PREP FOR ARRL FIELD DAY

Johnson house, near GD/Astro's Sycamore Canyon Test Facility, has been selected as base of operations for ARA Radio Club during its participation in American Radio Relay League (ARRL) Field Day June 27, 28.

Field Day is a national event in which radio amateurs attempt to work under emergency conditions to contact as many stations as possible during a 24-hour period.

John Creamer is Field Day chairman for the ARA group, and has invited interested "hams" among GD/Astro employees to contact him at Plant 19, ext. 1261, if they would like to participate.

IRC Offers Savings On Summer Theater

Limited numbers of Industrial Recreation Council exchange tickets for reduced rates at two Circle Arts shows are now available at GD/Astro employee services outlets.

The tickets may be exchanged for reserved seats to "Sound of Music," June 23, and "Li'l Abner," July 7. If presented at the box office at least two days prior to performances, $4.50 seats may be purchased for $3.15, or $3.75 seats for $2.60.

Golf Club Plans July Tourney At Torrey Pines

ARA Golf Club's next monthly tournament will be held July 11 and 12 at Torrey Pines, with starting times to be issued through ARA Headquarters, ext. 1111, June 22 through July 2.

Jack Weaver shot a gross 74 in the club's June sweepstakes at Balboa to take first place honors in the 0-12 handicap bracket. He led Ken Crotz with 86 and Ray Mendoza with 88.

Low net scorers in this class were Dick Tobias with 67, Hartland Moran and J. Jackman with 68s.

In the 13-17 handicap class, Lou DeBellow had low gross 80, with an 82 from Mark Pruitt and 83 by Norm Ryan. David Jorgenson shot low net 66, Sam Petcher 67, and Ivan Raney 69.

In the third flight (18-23 handicap) George Washburn's 81 was low gross, while Ed Bauer shot 84 and Paul Williams 87, and Don Crayton tallied 64 for low net, trailed by Ron Roth and Jim Miller with 67s.

Gerald Cooper had low gross 89 in the 24-and-up category, followed by C. Meinsen with 90 and Al Martin with 95. Low net honors went to J. Backstrom with 62, Phil Corbett with 66, and H. Rink with 68.

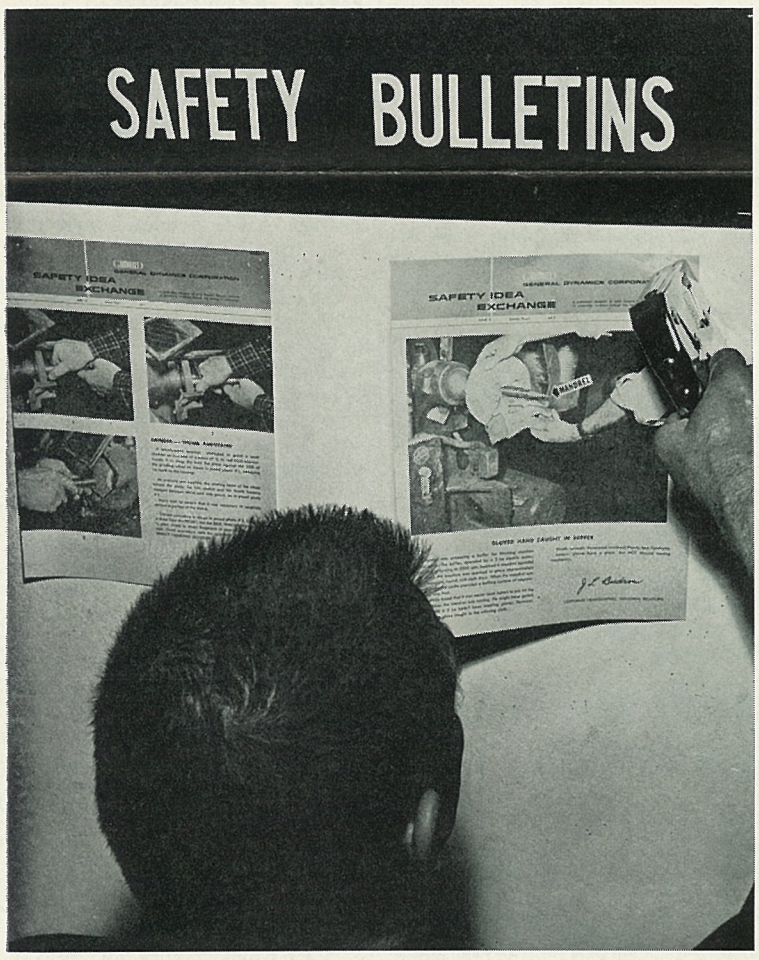
Jim Watt Is Elected Coineers President

Jim Watt, president, heads a new slate of officers elected by Astro Coineers.

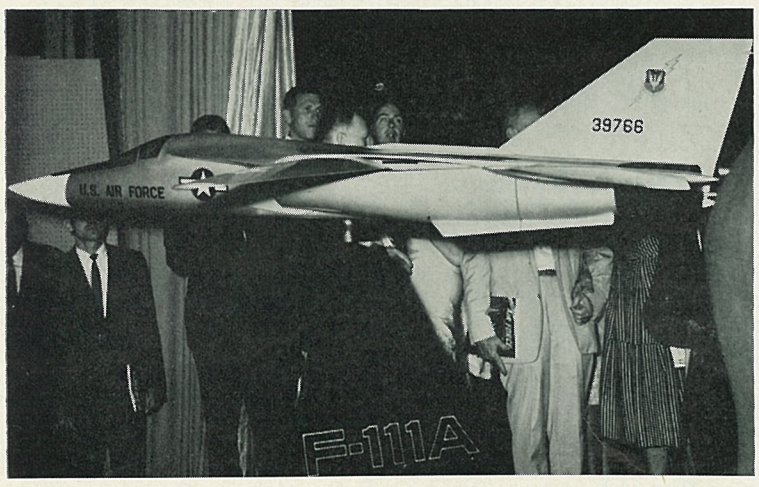
Others are Dick Freedman, vice president; Be Shaw, secretary; and Harriet Thompson, treasurer. John DePauli will serve as auction chairman for the coming year with Jack Shaw, display chairman; Bill Norton, publicity chairman; and Don Thompson, librarian.

Coineers meet tonight (June 17) at 7:30 in ARA Clubhouse. Douglas Decker will speak on the "Numismatic Tree," uncirculated coins will go to all attendees and a drawing will be held for a 1963 proof set. Theme of the meeting is the nickel, with ribbons going to the best displays and an auction and swap meet slated for later.

PRESIDENTIAL VISIT — In top photo, President Lyndon B. Johnson chalks initials on keel plate of nuclear attack submarine Pargo during June 3 visit to General Dynamics' Electric Boat division at Groton, Conn. With him, from left, Roger Lewis, General Dynamics president, J. William Jones Jr., president of E-B, Senator Abraham Ribicoff, Herman Doughrity, welder who burned "LBJ" on keel plate. Lower photo: Doughrity shakes hands with President Johnson after completing welding job.



SAFETY TIPS — Typical of use at General Dynamics divisions, first two issues of "Safety Idea Exchange" issued by Corporate Office are posted on bulletin board. Publication, introduced last month, is designed as assist in Corporation-wide emphasis upon accident prevention.



F-111 UNVEILED — This model of variable wing F-111 was placed on display at annual meeting of Aviation and Space Writers in Miami last week. It attracted major attention among exhibits.

Mobility

Score Shift To New Posts

(Following are recent personnel transfers among General Dynamics division. In parentheses are dates when individuals joined the company.)

Arthur W. Bluder (1942) from GD/Convair to Astro engineering; **Daymon H. Graham** (1957) from Daingerfield to Fort Worth aerospace technology; **Richard W. Gall** (1961) from Convair to Fort Worth support requirements; **Walter D. Honeycutt** (1963) from Convair to Fort Worth advanced programs; **Heflin T. Parris** (1956) from Daingerfield to Fort Worth aerospace technology.

James E. Howe (1947) from Convair to Fort Worth structural design; **Edwin E. Creamer** (1949) from Fort Worth to GD/Electronics-Rochester's AN/GLR-1 site operations; **Daniel E. Bolin** (1952) from Astro (Abilene) to Fort Worth tool & operations planning; **Victor L. Allwardt** (1943) from Astro (ERS) to Fort Worth F-111 tests.

Harrison W. Millard (1940) from Convair to Fort Worth airframe design; **Francis A. Sisson** (1950) from Convair to Fort Worth structural design; **Joe B. Waggoner** (1964) from Astro (Abilene) to Fort Worth tool & operations planning; **Charles Raymond** (1953) from Astro to methods engineer at Electric Boat; **James C. Watkins** (1956) from Electronics-Rochester to senior design planner, Electric Boat; **William N. Taylor** (1956) from Convair to Fort Worth airframe design; **J. B. Braziel** (1949) from Astro to Fort Worth project coordination; **Walter T. Green** (1951) from Astro to Fort Worth machine shop; **Jerry B. Hattox** (1963) from Astro to Fort Worth airframe design.

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Kunze Appointed To Corp. Staff

Conrad Kunze, a former assistant manager of GD/Convair division, has been appointed to the staff of R. M. Hatcher, Corporate director, operations service.

Kunze succeeds H. S. Wiseman as director, industrial engineering and operations support. Wiseman has been transferred to Fort Worth division as assistant factory manager.

Kunze, who attended Stanford University, was with Northrop Aircraft as superintendent of production and manager of material before joining Fort Worth division in 1956 as assistant chief tool engineer. The following year he was appointed industrial engineering manager and was transferred to San Diego in 1959. He left the company in 1961 to join Otis Elevator as assistant general manager.

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Howard Wall Shifts To Position in NY

Howard E. Wall, formerly of GD/Convair accounting, has been appointed manager of consolidated accounting in the Corporate Office, reporting to Robison Clark, assistant comptroller.

A 1955 graduate of the University of Utah, Wall has been with Convair since 1956.

Weight Engineers Headed by GD Men

Installed as officers of San Diego chapter, Society of Aeronautical Weight Engineers (SAWE), at a meeting earlier this month were four General Dynamics men.

H. G. Mileur of GD/Astro is chairman, with GD/Astro's D. O. Nevinger, vice chairman, and F. L. Dohn of GD/Convair, treasurer. Other GD/Astro men play key roles in the society, including J. E. Muller, retiring chairman, who presided at the meeting, and H. L. Jensen Jr., continuing on SAWE's board of directors, who served as installing officer.

IN THE FIELD — Artist's sketch shows how shoulder-fired Redeye will be used by troops in field against enemy aircraft.

Maj. Gen. Zierdt

'It'll Be Love at First Sight When Redeye Reaches Troops'

Army plans to issue Redeye "right down to rifle companies" were told by Maj. Gen. John G. Zierdt, commanding general, Army Missile Command, in a speech last month at Aviation and Space Writers Convention, Cape Kennedy.

Maj. Gen. Zierdt

Redeye, now entering initial production at General Dynamics/Pomona, was described by General Zierdt as the one mobile battlefield air defense weapon that can "get all the way forward."

"I feel safe in predicting that this one (Redeye) is going to be a case of 'love at first sight' when it gets to the soldier," General Zierdt stated.

Redeye was described as a shoulder fired guided missile using an infrared seeker to home on the heat emitted by an aircraft engine. It weighs less than 30 pounds, can be carried anywhere a man can take a rifle, and fires directly from a disposable fiberglass launcher case that also serves as a carrying case.

General Zierdt pointed out that the Redeye gunner uses his eyes and ears to acquire the target. When it comes within range, and the missile's heat seeker has acquired the target, the gunner fires it by pressing a trigger. From the time it leaves the launcher, the missile is on its own. Redeye is effective against a wide variety of low altitude targets: light liaison aircraft, troop carriers such as might be used in hostile parachute drops, helicopters, attack aircraft, even jets.

"Redeye was a long time in development and as is normal in all weapon systems, we are still improving it," General Zierdt said. "But it is a prime example of a successful attempt to make the target's characteristics work for the defense—in this case the aircraft engine."

New Designations Assigned to Ranges

New designations for East and West Coast Air Force missile test ranges have been established. Astronautics conducts operations at both locations.

The Air Force Missile Test Center (Patrick AFB) at Cape Kennedy, Fla., has been redesignated the Air Force Eastern Test Range (ETR).

Air Force Space Test Center (Vandenberg AFB) on the California coast has been redesignated the Air Force Western Test Range (WTR).

Ordnance Men Hear Dynamics Speakers

Two General Dynamics employees appeared on the program of the American Ordnance Association recently at Dallas.

They were C. E. Nevitt of GD/Fort Worth, who spoke on "Yesterday, Today and Tomorrow," and Dennis Brending, GD/Electronics-SD, who appeared on a panel of "Advanced Technology in Autographic Presentation."

"Oh, there you are, Johnson! The collection we were taking up was for you."

GD

ASTRONAUTICS EDITION

GENERAL DYNAMICS NEWS

Vol. 17, No. 14 PUBLISHED BY GENERAL DYNAMICS CORPORATION Wednesday, July 1, 1964

INSURANCE BRIEFING — Industrial relations administrators from six General Dynamics divisions gather at San Diego to hear details of improved group insurance plan going into effect for GD flat-salaried people. Present were Edwin McManus of GD Corporate Office; Dick Mitchell, Keith Sears, J. T. Schultz, Robert Young of Astro; J. K. Field and Ken Wulfemeyer of Convair; Jack Swank and George Oatman of Electronics - SD; Tom Croft of Fort Worth; Henry Anthony and Richard Germond of General Atomic; H. S. Naish and Ed Glasson of Pomona; as well as R. M. Darval, J. G. Richter, Holeman Grigsby of Aetna Life Insurance Co.

Improved Salaried Group Insurance Program Goes Into Effect Today

Substantially expanded and improved group insurance for salaried employees of General Dynamics/Astronautics goes into effect today (July 1).

Included:

Basic life insurance has been increased from $8,000 to $10,000 with the Corporation paying the additional premium; additional amounts of low-rate life insurance are being made available.

Increased accidental death and dismemberment insurance is in effect, Corporation-paid.

A new life insurance disability feature has been added to the program.

Medical coverage for employees and dependents has been materially enriched.

Additional accidental death and dismemberment insurance can be ordered at an exceedingly low rate.

And, if a sufficient number apply, a new cash value life insurance provision will go into effect.

A letter from President J. R. Dempsey was mailed to all salaried employees, touching upon the insurance program and covering other personnel matters as well, and an interim brochure distributed further explaining the insurance provisions. Eventually a complete new "Salaried Group Insurance Booklet" will describe the new program in detail.

Enriched Insurance Part of Master Plan

Dramatic enrichment of General Dynamics' group insurance program for salaried employees is a continuation of an overall plan to make General Dynamics an even more attractive company to work for, Algie A. Hendrix, Corporate vice president-industrial relations, announced this week.

First major step was the vastly improved salaried retirement program (GD/NEWS, Jan. 15, 1964), recently approved by the Internal Revenue Service, which included many new benefits, as well as reduction by half of the employee contribution. This now has been followed by widespread group insurance improvement.

"General Dynamics intends to remain competitive, not only in the cost of our products but also in the Corporation's ability to attract and retain high caliber personnel," Hendrix added. "And we intend to continue in the vanguard with tangible demonstrations of forward looking personnel policies and practices."

Commendation System Will Recognize Roles in Originating Value Projects

Initial commendations recognizing GD/Astronautics employees who have implemented a value control project were presented this week.

They represent the beginning of a new system of special recognition.

E. D. Bryant, vice president-operations, passed on the honors to three operations functions employees. He pointed out they are representative of those responsible for 47 implemented projects within his organization that will save some $3,167,000!

W. V. Gatterman (Dept. 780) was recognized as the originator of the value engineering project with the greatest saving — $1,155,000; J. E. Carlin (Dept. 403), as the man originating the most (12) projects with a total saving of $251,000; and R. P. Concannon (Dept. 403) as the man responsible for the first (in June, 1963) value control project implemented. It led to an $18,000 saving.

Under the new system, administered by the cost reduction and value control section, each individual will be recognized for projects that are implemented.

The individual receives a certificate of commendation identifying the project and has a certification notice added to his personnel file. The certificates will be issued for initial projects only, although certification notices will

(Continued on Page 2)

Florida Honors Astro Safety

CAPE KENNEDY — General Dynamics/Astronautics employees here were honored recently by the State of Florida after logging more than a million manhours of work without a lost-time accident.

Astro became the 24th firm in the past 17 years to receive the Florida Industrial Commission's "Scroll of Honor." Commission Chairman Worley Brown made the presentation to Astro's L. N. Foley Sr., selected to accept for his outstanding contributions to safety.

The award was presented in Miami during the Fourth Annual Executive Safety Conference staged by the South Florida Chapter, American Society of Safety Engineers, and the University of Miami's Industrial Engineering Department.

(At that time Astro's Eastern Test Range force had just topped the million-manhour mark.)

Off-Site Operations Set Safety Marks

Outstanding safety records have been achieved by ALL GD/Astronautics' off-site operations!

Through June 19 Edwards Rocket Site had gone 1,318 days and worked 1,735,140 manhours since the last lost-time accident. Sycamore Canyon Test Site has 637 days and 1,320,989 manhours; Vandenberg AFB (WTR) has 263 days and 1,420,436 manhours!

Astro, TRW Join For Bid on MOL

General Dynamics/Astronautics and the TRW Space Technology Laboratories are joining forces to bid on the Air Force's upcoming manned orbiting laboratory (MOL) program.

Details of the affiliation were revealed for the first time this week by J. R. Dempsey and Dr. Ruben F. Mettler, presidents of the two concerns.

If the bid is successful the Astronautics-TRW arrangement calls for Astro to be the prime organization with overall responsibilities in such specific areas of work as life support systems and production. As a sub-contractor, TRW would handle systems engineering and do development work in such areas as electronics and data management.

Last December the Department of Defense assigned development responsibility for a manned orbiting space laboratory to the Air Force. Objective is to place MOL into earth-orbit before 1970. Designed to be approximately the size of a small house trailer, MOL would allow astronauts to move freely about without space suits and to conduct experiments and observations for periods of up to 30 days.

"We feel the Air Force requirements for strict management and technical control of the MOL program, under their overall direction, can be met through the complementary skills our two organizations have in those areas," Dempsey said.

General Dynamics and TRW have worked closely and successfully for the Air Force on past major aerospace programs, notably the devolopment of Atlas, Dempsey added.

Mortimer Rosenbaum, Astro vice president and program director—manned space systems, and Dr. E. B. Doll, TRW Space Technology Laboratories vice president, will head MOL activities in their respective firms.

CANDIDATES FOR TRAINING SOUGHT

A new employee development effort, the "Industrial Management Training Program," has been instituted at GD/Astronautics to further the division's policy of encouraging employee self-improvement.

Deadline for return of completed applications (available through the office of R. A. Evans, manager of personnel administration) has been extended to July 7.

Open to all salaried, non-supervisory employees with certain minimum qualifications, objectives of Industrial Management Training are three-fold.

The program is designed to: improve management capabilities at GD/Astro by training qualified individuals, provide these individuals with opportunity for developmental experience and advancement to management positions, and to foster development

(Continued on Page 2)

Astro and E-B Join in Navy Training Stint

General Dynamics Corporation is drawing talent from its Astronautics and Electric Boat divisions to conduct an unusual training program for the U. S. Navy Bureau of Ships (BuShips).

It begins this month and continues into early 1965.

Key aim is to indoctrinate about 800 Navy military and civilian personnel in new disciplines of reliability and quality.

Long known as a prime producer of reliable launch vehicles, Astronautics is providing management and the majority of instructors for the program. GD/Electric Boat, veteran builder of quality-proven submarines, is assisting as needed and providing some instructors. Corporate reliability executives are taking an active part in the entire effort.

There are two contracts involved, won in competition with other firms.

The first covers a Quality/Reliability Assurance Program to be conducted at Navy shipyards at San Francisco, Calif., and Groton, Conn. At each location Navy shipyard personnel will attend 40-hour training sessions. Seventeen instructors will be involved in both, with sessions in July and August for some 86 students.

Under the same contract a special Quality Control Short Course will be held in Washington, D. C., for some 600 BuShips engineers taking part in two, three-hour courses each. They will

(Continued on Page 2)

WEIGH ANCHOR! — Extensive reliability training program General Dynamics will conduct for Navy Bureau of Ships opens soon. Among planners are (front row): E. S. Winlund, GD/Astro manager of reliability control engineering; T. W. Dunn, assistant Electric Boat general manager; G. K. Langford, head, quality assurance branch, BuShips; P. I. Harr, GD/Astro director of reliability; J. Y. McClure, Corporate director of reliability, quality control, value control; Paul Mali, Electric Boat director of training. Back row, all GD/Astro: A. J. Woodington, G. L. Stiehl, L. S. Franklin, K. M. Boekamp, George Schwab, C. S. Thomas, M. R. Seldon and Sam Petcher, all Astro.

Papers Presented

ASTRONAUTICS

LUDWIG—C. B. with FERRISO, C. C., Dept. 596-0. "Temperature Determination of Hot Gases from Infrared Radiance Measurements," American Physical Society summer meeting, Denver, June 25-27.

RUHE—R. K., Dept. 261-5. "Logic Simulation for System Integration and Design Assurance," SAE-ASME-AIAA Aerospace Reliability and Maintenance Conference, Washington, D. C., June 29 to July 1.

* * *

The following presented at AIAA's First Annual Meeting and Technical Display, Washington, D.C., June 22 through July 5:

FAGGER—J. A., Dept. 557-2. "The Development of Titanium Alloy for Lightweight Liquid H2 Tankage."

GREENSTEIN—J. with J. HUNTER, Dept. 582-1. "A Preliminary Design of an Early Manned Space Station."

GRIGGS—M., Dept. 596-0. "The Bubble Ozonesonde for Measuring the Vertical Distribution of Atmospheric Ozone."

HASKINS—J. F. with J. L. PERCY, Dept. 592-1. "Application of the 'Cooling Curve' Method to the Measurement of Specific Heat to 20° K."

NELSON—K. with W. LOMNICKY, Dept. 512-2 and 591-4 respectively. "A Versatile Simulation of the Trajectory, Stability and Bending Moment of a Space Boost Vehicle on the Analog Computer."

NEWSOM—B. D., Dept. 594-3. "The Significance of the Resultant Vector from Gravity & Centrifugal Accelerations in Defining Human Tolerance to Rotation."

MAGNUSON—G. D. with A. W. McREYNOLDS and H. G. ARRENDALE, Dept. 596-0. "Space Radiation Shielding Measurements with an Electron Accelerator."

ROSE—R. G. with R. HARRIS, Dept. 512-2. "Dynamics Analysis of a Coupled Structural-Pneumatic System Longitudial Oscillation for Atlas Vehicle."

THOMSON—J. A. with F. BOYNTON and L. D'ATTORE, Dept. 596-0. "Aspects of Supersonic Rocket Plumes."

WILSON—P. E. wtih E. E. SPIER, Dept. 557-1. "Numerical Analysis of Large Axisymetric Deformations of Thin Spherical Shells."

* * *

The following presented at the American Society for Testing Materials Summer Meeting, Chicago, June 21-26:

CHRISTIAN—J. L., Dept. 592-1. "Effects of Thermal Exposures on the Mechanical Properties of Several Foil Gage Materials."

MIYAJI—M. C., Dept. 563-1. "Proposed ASTM Method for Testing Materials for Liquid Oxygen Impact Sensitivity."

Retirements

BLAYZOR—George H., Dept. 832-2. Seniority date, Feb. 3, 1956. Retired May 28.

BURE—William R., Dept. 460-0. Seniority date, Oct. 1, 1947. Retired May 28.

FUMARO—Mary S., Dept. 715-0. Seniority date, March 14, 1951. Retired May 28.

KINKEL—Homer O., Dept. 811-2. Seniority date, Jan. 15, 1952. Retired May 1.

KOPANKO—Nick, Dept. 250-4. Seniority date, July 20, 1960. Retired June 1.

ROLPH—Joe N., Dept. 143-6. Seniority date, Oct. 8, 1953. Retired May 28.

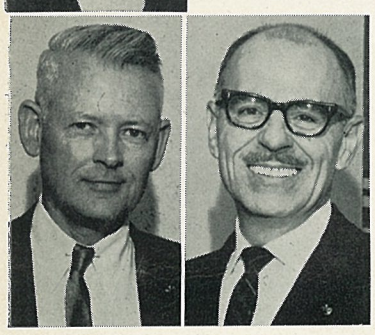
TAGGART—Rufus, Dept. 250-5. Seniority date, Sept. 17, 1941. Retired May 28.

Personals

We wish to express our gratitude for the generosity of General Dynamics' employees and friends in memory of our daughter and sister, Peggy Joan, 12, a victim of leukemia.

Emily, (Dept. 951-5), Sidney and Charles Dashevsky.

Charles E. Edenfield, Dept. 663-4, recently received 25-year service emblem at Astronautics.



Two 25-year men at GD/Astronautics are Richard H. Robbins, Dept. 961-8, left, and Romie Barbat, Dept. 580-0.

Ed Duke Earns 'Man of Month'

GD/Astronautics Management Club's Man-of-the-Month award for May was presented at the club's dinner dance June 20 at El Cortez Hotel to Edward M. Duke Jr., senior quality control engineer, Dept. 141-2.

Duke was cited for two Cost Improvement Proposals approved during May, with combined first year estimated net savings of $8,500.

Both CIPs concerned activities within process control department. One proposed elimination of weekly analysis of trichlorethylene (distillation range) and of de-ionized water, while the other suggested a change in cleaning solvent from oxylene (discarded after each use) to Freon TF solvent which can be reclaimed by distillation.

Considered together Duke's proposals will save GD/Astro 590 manhours per year, plus an additional $6,692 in material savings.

MAY'S MAN — President Ralph Bauman of Astro Management Club, left, congratulates Edward M. Duke Jr., of Dept. 141-2 on winning Man-of-the-Month honors for May. Duke had two CIPs with total net savings of $8,500 approved.

CANDIDATES FOR TRAINING SOUGHT

(Continued from Page 1)

of potential talent in the business management area.

Program candidates must be salaried employees under 30 years of age, with at least one year's continuous service with the company.

They must hold an advanced academic degree or be presently enrolled in an advanced degree program, and have demonstrated high-grade work on their present job assignment as well as evidence of leadership potential.

Nomination by supervision is required.

Program participants will receive a broad spectrum of experience, gaining familiarity with the division's total operation by rotational work assignments in such areas as budgets, contracts, industrial relations, material operations, engineering, etc.

Deaths

MAIN PLANT

O'CONNOR—Clarence P., Dept. 547-7. Died June 14. Survived by wife, Mildred M.

CAPE KENNEDY

TOBIN—Clifford J., Dept. 571-7, Died June 14, Survived by wife, Emily Jean, and daughter, Jean.

JUNE GRADS — Members of GD/Astronautics June value engineering seminar form ranks for photo in ARA Clubhouse auditorium where sessions were held. Flanking front row are instructors Everett Lindem, left, and Hal Sicard, right.

Astro and E-B Join in Navy Training Stint

(Continued from Page 1)

be held in August.

Astro's George Schwab of quality assurance is course manager for this program.

Kicking off in September will be a Reliability Training Program, the second contract. It will continue into 1965 and will be held in Washington, D. C.

This program includes three courses, each tailored to the group taking part. Fifty top BuShips executives will take part in an eight-hour course taught by General Dynamics management. A 16-hour course for 200 in the middle-management classification follows. Then a 40-hour course for BuShips engineers (about 400) concludes the program.

General Dynamics has gathered material from many sources to create a comprehensive and complete training program, each phase especially selected for the students taking part. Many visual aids will enhance the sessions. A Corporate Shipbuilding Reliability Training Project, with representatives from several divisions, is reviewing all material before it is used in the program and assisting in making the lectures useful and concise.

Corporate guidance is provided by J. Y. McClure, director of reliability, quality control, value control. He will also serve as first instructor for the top management classes.

Astronautics' work on the project is directed by E. S. Winlund, manager of reliability control engineering, also slated to teach in the top management course. C. S. Thomas is responsible for full course content and will manage the course in Washington. Dr. G. L. Stiehl of Astro is on contract as a consultant to BuShips in Washington and will help guide course preparation for BuShips.

Electric Boat guidance is provided by T. W. Dunn, assistant general manager, and Paul Mali, assistant course manager for both programs. GD/Fort Worth's Dr. N. H. Simpson, F-111 quality control director, will also serve as a top management instructor.

For the BuShips, G. K. Langford, head of the quality assurance branch, is directing the entire program with assistance from Dr. Stiehl.

AF Reserve Group Seeking Recruits

Many ex-Air Force personnel among GD/Astro employees took part in an Air Force Reserve orientation and counseling session conducted last month by 994th Troop Carrier Group (Reserve).

A member of the unit, Frank H. King (Major, USAFR) assigned to AFPRO at GD/Astro, said other meetings of this kind will be scheduled. He invited interested employees to contact him at 465-2989 for details.

King said the 994th has openings for all enlisted grades and for flying officers through the rank of captain. The unit trains at March AFB.

Graduates of Astro VE Course Approach 250 for '64 Alone

Mid-point in GD/Astronautics value engineering seminar program for the year was reached last month with completion of the sixth two-week workshop session to be held during 1964.

The 40 June graduates brought to nearly 250 the number of GD/Astro men to receive formal instruction in techniques and philosophies of value engineering this year alone.

Seminars are held monthly under direction of Everett Lindem and Hal Sicard of educational services (Dept. 130-3).

Because training projects are actual production items, carefully pre-selected for potential savings, the instruction pays its own way and to date has returned savings well in excess of the cost of the seminars.

Teams and their projects for VE Seminar 6-64 were:

Team #1 — Firewall door assembly (submitted by SLV). K. W. Eckert, Dept. 549-2, E. G. Kiener, Dept. 250-2, W. E. Townsend, Dept. 759-0, A. E. Williams, Dept. 403-3, Mike Alianelli, Dept. 780-1. Project leader, Joe Ratajkowski, Dept. 141-4.

Team #2—Demodulator assembly (submitted by operations). R. S. Barlow, Dept. 756-0, G. R. Morton, Dept. 250-2, R. J. Nichols, Dept. 665-3, A. S. Page, Dept. 403-3, J. H. Stroessler, Dept. 262-3. Project leader, Ratajkowski.

Team #3 — RSC forward mount installation (submitted by operations). C. Bierman, Dept. 654-1, G. H. Foster, Dept. 812-0, J. R. King, Dept. 832-1, S. Maynard, Dept. 663-7, D. E. Tibbs, Dept. 756-0. Project leader, Ed Schraith, Dept. 549-6.

Team #4 — Harness tray (submitted by SLV). D. Hawk Jr., Dept. 549-7, N. W. O'Rourke, Dept. 261-6, W. E. Pfanner, Dept. 663-4, R. A. Bada, Dept. 756-4, F. A. Fox, Dept. 196-0. Project leader, Schraith.

Team #5 — Upper stage equipment pod bulkhead installation (submitted by operations). R. F. Donnelly, Dept. 140-2, D. F. Schonholtz, Dept. 663-4, S. R. Sieler, Dept. 381-1, W. D. Osburn, Dept. 402-0, R. Leffler, Dept. 568-4. Project leader, E. A. Littlefield.

Team #6 — LO2 level transmitter assembly (submitted by operations). A. W. Clark, Dept. 373-3, S. C. Granger Jr., Dept. 375-1, J. A. Long, Dept. 146-4, A. H. Wilkens, Dept. 662-6, R. A. Deutschman, Dept. 382-1. Project leader, Littlefield.

Team #7 — Autopilot module frame assembly (submitted by engineering). V. E. Hoagland, Dept. 731-0, R. P. Muir, Dept. 373-7, R. D. Williams, Dept. 140-2, G. Mouritzen, Dept. 528-2, W. G. Curtiss, Dept. 549-6. Project leader, Phil Howie, Dept. 405-2.

Team #8 — Acoustica P/U mount installation (submitted by operations). A. W. Alford, Dept. 403-0, N. J. Barnes, GD/Electronics-SD, A. L. Littau, Dept. 568-3, M. W. York, Dept. 528-4, J. R. Breeze, Dept. 976-1. Project leader, Howie.

Outdoor Facilities For Eating Expanded

Three new outdoor dining centers will be ready soon for the convenience of GD/Astronautics personnel at the main plant.

They will feature covered patio-type shelters, tables and benches, etc. Each will be served by a mobile lunch wagon nearby.

Centers will be located just south of Bldg. 26, between Bldgs. 5 and 33, and south of Bldgs. 5 and 4 near Gate 8.

Also scheduled to open before the end of summer is a new snack bar — dining area to be located just north of Bldg. 33. It will feature all services currently available at the Bldg. 8 snack bar, including hot casseroles, "TV" dinners, sandwiches, drinks, etc.

DIESEN NAMED COUNCIL DIRECTOR

Carl E. Diesen, manager of scientific programming and analysis at GD/Astro, has been named a director of the National Council of the Association for Computing Machinery for 1964-1968. Diesen will represent the entire Southern California area (south of Bakersfield) on the national group.

Commendation System Will Recognize Roles in Originating Value Projects

(Continued from Page 1)

follow each approved project.

G. M. Loudermilk, operations value control coordinator, pointed out the new system operates independently of Employee Suggestion and Cost Improvement Proposal programs at Astro.

In his presentation of the initian commendations, Bryant added that 26 other operations functions employees have submitted value engineering projects that have been certified and implemented. Employees involved are in operations functions exclusive of material department, which coordinates its own value control program.

Others responsible for the projects implemented include A. J. Thurlby, C. B. Quinsler, Markus Marks, L. M. Gibson, Keith Spence, E. V. Russell, Lou Whitney, H. M. Hemmington, Al Rohr, L. B. Raper, V. Bentley, Andy Simington, J. G. Wing, J. N. Pasich, C. L. Thompson, C. E. Roye, E. B. Stevens, J. T. Treat, W. R. Walker, A. J. Ortega, R. G. Stone, R. T. Mulroy, L. L. Richardson, W. E. Ladd, Tom Eckles and D. W. Keaton.

FIRST ISSUE — E. D. Bryant, Astro vice president-operations, right, passes out certificates of commendation for value engineering projects implemented by, from left, R. P. Concannon, W. V. Gatterman, J. E. Carlin.

General Dynamics NEWS

Published by General Dynamics Corporation, One Rockefeller Plaza, New York 20, N. Y.; with editorial headquarters at 3302 Pacific Highway, San Diego 12, Calif., P.O. Box 1950, telephone 296-6611, ext. 1071. Logan Jenkins, editor-in-chief.

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Affiliated editions of General Dynamics NEWS are published in Rochester, N. Y., covering GD/Electronics and Stromberg-Carlson, editorial offices, 100 Carlson Road, HUbbard 2-2200, ext. 2555. Fred E. Voss, editor; and at Groton, Conn., covering GD/Electric Boat, editorial offices at Groton, HIlltop 5-4321, ext. 300 and 513, Joseph Tracey, editor.

Looking Backwards

Triple Ace George Bostwick Recalls Downing Early Jet

Few World War II fighter pilots gained credit for downing a jet.

But George Bostwick did, and the GD/Fort Worth administrator-change planning recounted the event at a recent convention of American Fighter Aces Association in Dallas.

"This German jet was taking off from one of their long runways when I spotted him," Bostwick said. "I dived in and got him before he had much chance to climb."

Bostwick felt lucky. Admittedly, his 350 mph P-47 Thunderbolt would have been hard-pressed to escape the 550 mph jet.

"Fortunately," Bostwick added, "the war ended before many of these new jets were in service."

Bostwick, a triple ace with 15 aircraft to his credit, had many more tales to swap with his World War II cohorts.

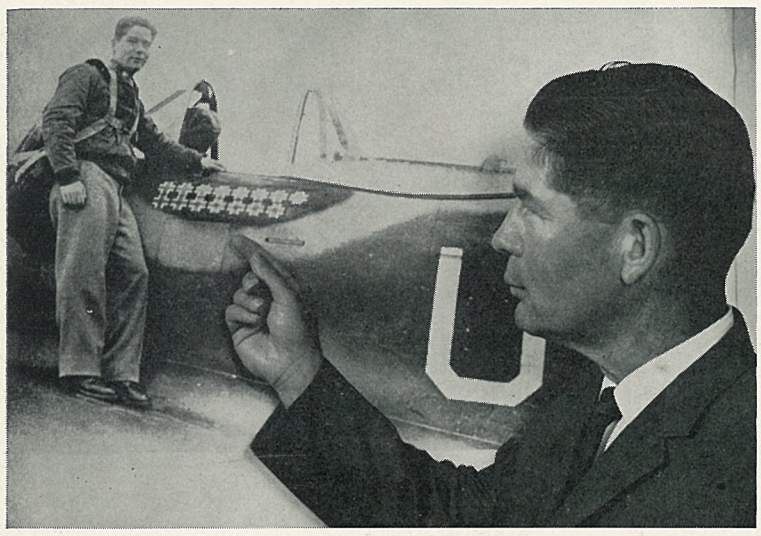
For his exploits, Bostwick earned the Silver Star, the Distinguished Flying Cross four times, the Air Medal 16 times, the French Croix de Guerre, and 10 other decorations.

Bostwick entered the service in 1941, after graduation from Ripon College in Wisconsin. He later received most of his pilot training in Texas—a locale he obviously still holds in high esteem.

After the war, he earned an aeronautical engineering degree, and later, a master's degree in business and industrial engineering from Stanford.

During his Air Force career, he served, among other places, at GD/Convair. He was commander, Air Force Procurement Region, Europe, at the time of his retirement last year.

Bostwick has logged over 4,000 hours flying time. With few exceptions, he has flown all aircraft in Air Force service during the past 20 years.



OLD TIMES — George Bostwick, GD/FW administrator-change planning, reminisces over photo taken when he became triple ace during World War II.

Chips Zip Away

Vacuum Device at Work Bench Keeps It 'Constantly Clean'

A newly-designed work bench at GD/Pomona is being evaluated to determine the advantages of a "constantly clean" work station for manual deburring.

"Built at nominal expense and of the normal height, width and length, the entire working surface of the bench is an open grid structure, coated to prevent damage to parts," J. R. Ewell, manufacturing engineer (Dept. 24), said. "The open surface allows dirt and chips to sift into a full-length sealed metal receptor below."

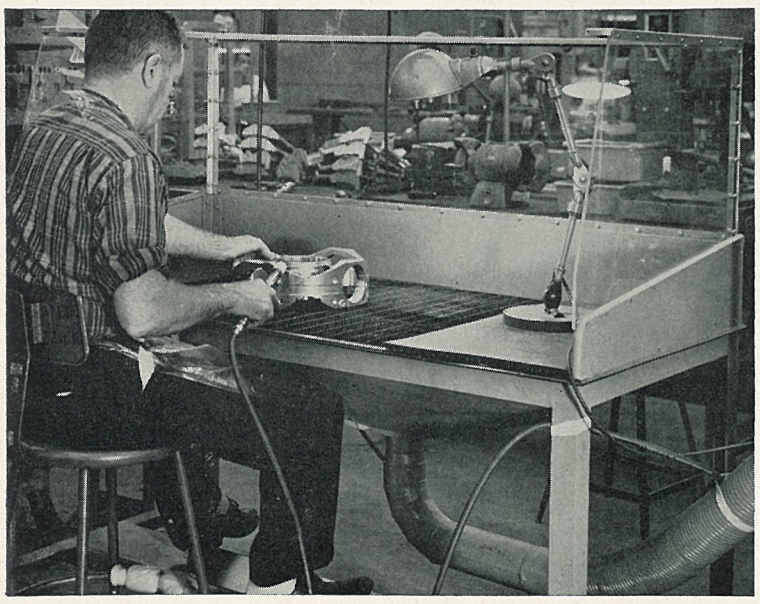
The ends and back edge of the bench are backstopped with a wood sill and plexiglas shields. A strong vacuum pull from a nearby dust collector draws away the dirt accumulating in the receptor chamber below the grid.

In addition, the vacuum provides a substantial air wash down through the grid surface with no accumulation areas for unwanted trash.

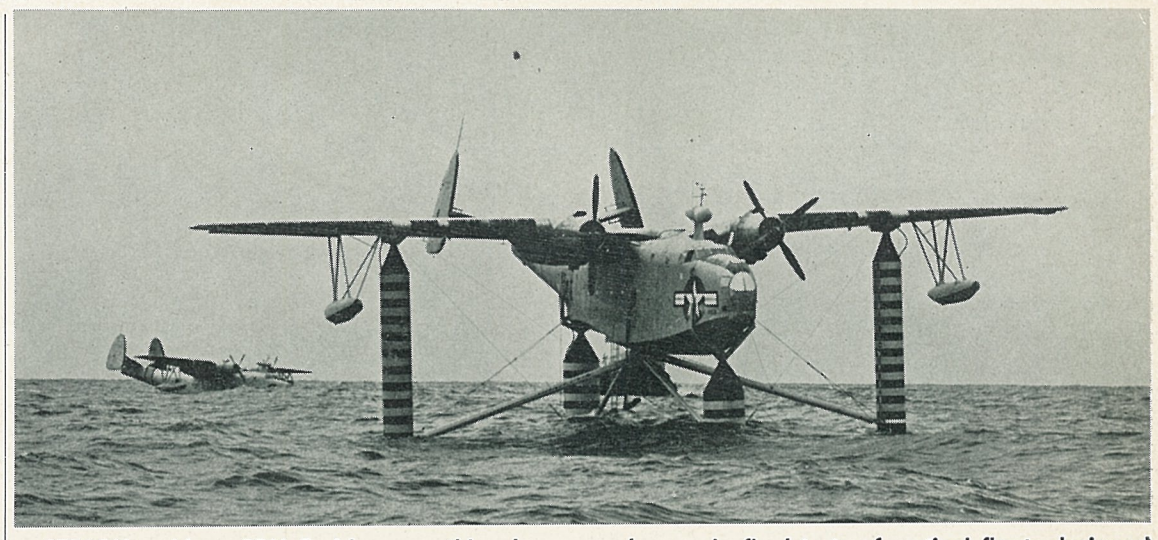
One notable advantage is that the open worktop of the bench holds no metal chips which could scratch otherwise good parts. The part also remains cleaner during the deburr operation and critical surfaces can be easily examined for small defects.

Another advantage is that the three-sided plexiglas shield reduces the hazard of flying particles from other work benches.

Despite certain bulk handling means or semi-automatic methods of deburring, it often is necessary to use the more expensive individual hand deburring. Many parts still must be finished by hand to eliminate sharp edges. When this is necessary, the GD/Pomona clean bench eliminates periodic brushing or blowing of chips onto the floor.



DEBURR BENCH — Operator W. W. Tenpenny (Dept. 51) deburrs missile part in evaluation of GD/Pomona's new clean deburr bench. Vacuum pulls air and dirt down through open grid of bench top.



STEADY — Navy PBM-5 rides smoothly above rough seas in final tests of vertical floats designed by GD/Convair. Crew aboard conventional PBM (left) were racked with seasickness as plane tossed in 10-foot waves while men aboard vertical-float seaplane were unaffected by motion.

Vertical Float System Success on High Seas

Final testing in heavy seas of the unique vertical float system developed by General Dynamics/Convair and the U. S. Navy have proved that a seaplane can operate as a stabilized vehicle on the open ocean.

Initial full-scale tests of the Convair float design were held successfully in relatively light seas off the California coast, near San Clemente Island, a year ago. (**GD/NEWS**, June 26, 1963.)

The vertical-float concept, originated by E. H. Handler of the Bureau of Naval Weapons, is termed a breakthrough for anti-submarine warfare aircraft. Convair began development of the floats under a Navy contract in 1962.

In the recent tests conducted in heavy seas off the San Diego coast a non-flying Navy PBM-5 seaplane was fitted with four of the Convair-designed floats. Floats under each wing are four feet in diameter and 40 feet long. The two under the hull measure five feet in diameter and 26 feet long.

During an eight-hour test period the plane rode virtually motionless above waves up to 10 feet in height. The crew monitored instruments that recorded data on pitch and roll motions, accelerations, wind velocity, and stresses on the float structure.

A second PBM, not equipped with floats, was stationed nearby for comparison. As the plane rocked in high waves, persons on board became seasick with the severe motion. Crewmen on the float-equipped plane carried out their duties without discomfort.

For test purposes, the floats were permanently fixed in position on the tug-towed seaplane. However, Convair has proposed an operational version to the Navy in which the floats would retract into the plane during flight and extend after landing.

The vertical-float PBM tests were conducted by Convair with the assistance of civilian and military personnel at North Island Naval Air Station, San Diego, and at the Sea Island Range (San Clemente) of the Naval Ordnance Test Station, China Lake, Calif.

Eleven From Astro In Graduating Class

GD/Astronautics was strongly represented in the current Law School graduating class at University of San Diego.

In addition to the seven law graduates listed previously (**GD/NEWS**, June 17), other GD/Astro employees receiving "sheep skins" were Fred Corbin, Dept. 196-0; A. A. Koch, Dept. 512-1; J. L. Gimbrone, Dept. 556-7, and P. J. Lynch, Dept. 660-6.

Electronics to Study Typewriter Project

GD/Electronics-Rochester, has received a contract from the U. S. Navy Bureau of Ships for research and development of a machine-language typewriter, with both tape-producing and tape-reading capabilities. The contract is for $530,000, and the project is now under way at the Goodman Street plant.

FW CLUB OFFICERS ATTEND SEMINAR

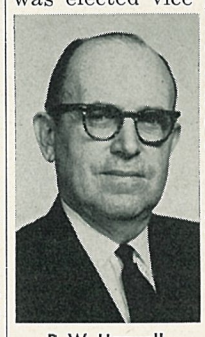
Three GD/FW Management Club officers attended the 105th Management Unity Seminar of the National Management Association in Dayton June 21-26. Attending were: F. B. Thompson, president; B. W. Parks, corresponding secretary; and J. R. Vaughan, chairman of management development committee.

KIERNAN NAMED STAFF ASSISTANT

Bernard W. Kiernan, formerly supervisor of consolidation accounting in the Corporate Office, has been promoted to staff assistant to Robison Clark, assistant comptroller. Kiernan, who graduated from Hofstra College, NYC, with a BBA, was with Arthur Anderson Co., before joining General Dynamics.

GD/FW Acct. Manager Wins National Office

R. W. Harwell, GD/Fort Worth manager of general accounting, was elected vice president of the National Association of Accountants at the group's annual conference recently in Washington.

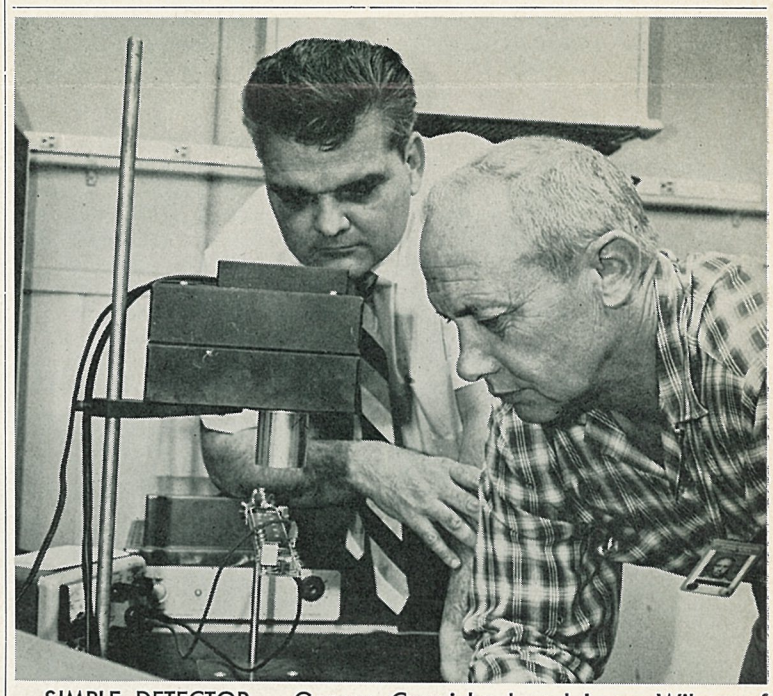


R. W. Harwell

Harwell is past president of the Fort Worth Chapter and has been active in the national association for several years. As vice president, he will be responsible for relations among 175 chapters in the organization.

He also has contributed a number of articles to NAA Bulletin.

In 1952 and 1954 he was awarded the William M. Lybrand Certificate of Merit for his contribution to literature for the advancement of industrial accounting.



SIMPLE DETECTOR — George Carmichael and Loren Wilson of Astro's Laser and optics group watch experimental model of new-type infrared sensor in action as it "examines" electronic parts for defects.

Economical Sensor Developed To Spot Electronic Defects

An economical infrared device to pinpoint defective electronic components before they actually become an integrated part of a complicated system in a space vehicle, for instance, has been developed by General Dynamics/Astronautics' Laser and optics group as an experimental model.

The infrared sensor is designed as an aid in the expanding field of precise electronic inspection, said George Carmichael, in charge of the project.

It acts as a camera to spot bad components in circuit boards and small electronic assemblies right at the assembly bench stage long before they can cause trouble in a system.

Defective resistors and transistors tend to give off more radiation — run hotter than the normal "body temperature" of perfect parts. The sensor's special lens of calcium fluoride, developed by Loren Wilson, optics specialist, is able to pick up and transmit radiation wave lengths from relatively low-temperature components, which ordinary optical material could not handle.

The lens concentrates radiation from the parts on a detector. Amplified signals then can either be observed on an oscilloscope or recorded graphically on an oscillograph. Increase in amplitude of signals indicates bad components.

Such a simple and easy-to-operate detecting device would be of great value in quality assurance of electronic assemblies, said Stan Logue, Laser and optics chief.

Others involved in the sensor's development included Glen McPherron, senior design engineer, responsible for the mechanical package; Art Hayward, GD/Astro Dept. 756 senior electronic development technician, who did the assembling and calibrating; Charles Baker, optician, who ground the special lens.

YOUNG MARKSMEN — General Dynamics' teen-agers competing in Astro Rifleers' junior teams show smart style and prowess on range at their first NRA registered tournament early last month. At far right is overall view of youngsters in prone position during competition. Center, Laura Farrelly, girls' coach, answers questions during break. At left are Shelley McGregor and Karen Miller, Convair daughters, both winners of ARA trophies, sighting at targets in standing match.

SCHOOL'S OUT — Astro and Air Force folk involved in one of 12 San Diego Evening College "Quality Control and Reliability" certificate and degree program classes line up on final night. W. F. Rice, right, is one of nine Astro men teaching courses. Four courses were taught on-site after work hours for 150 Astro and Air Force students.

GD/Astro Personnel Take Active Part As Students, Instructors in Quality

When the spring semester sessions of a San Diego Evening College "Quality Control and Reliability" certificate and degree program wound up last month interest was especially high at one point in particular.

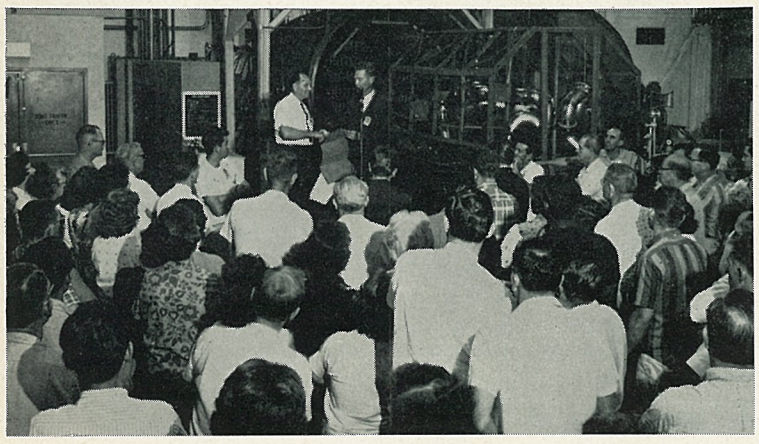
That's GD/Astronautics where reliability control and Air Force quality control personnel have been especially active.

Eight of the 12 courses offered were taught by GD/Astro instructors with four special classes held on-site at Astronautics after work hours.

Forty-four students (35 Astro; nine Air Force) took a "Quality Control and Techniques" course on-site. Three classes with a total of 106 students covered "Inspection Principles" and were also offered on-site.

Astro instructors in the program included W. F. Rice, W. Olson, I. L. Kemper, J. H. Rusk, M. R. Seldon, C. R. Blust, C. S. Thomas, F. S. Graham and G. J. Bartolomei.

This program is administered by a nine-member advisory council representing the Evening College, industry, U. S. Navy and U. S. Air Force operations in the area. D. E. Moore, chief of the AFPR quality control division at GD/Astro, is chairman of this Council. Astro members on the council are P. I. Harr, M. R. Seldon, C. A. Miller and W. F. Rice.



WELL DONE — Processing (Dept. 33) employees look on as President J. R. Dempsey, right on platform, presents May Craftsmanship award to General Foreman Merle Goodhart. Department showed 12 per cent improvement over previous production quality levels to garner top spot in Astronautics program.

Craftsmanship Award for May Earned by Dept. 733 Employees

Presentation of GD/Astronautics Craftsmanship award for May was made last month by President J. R. Dempsey to processing (Dept. 733) headed by General Foreman Merle Goodhart.

Dempsey praised the assembled Dept. 733 employees for their performance in marking a 12 per cent improvement over their previous production quality levels, and disclosed that during the contest period the department submitted 74,375 units for inspection.

Of these, only 116 were rejected!

A newcomer to the Craftsmanship competition ranked second in the May contest. This was Centaur final assembly and checkout (Dept. 972) which showed a 9.8 per cent improvement during the month.

The Craftsmanship competition is part of GD/Astro's division-wide effort encouraging employees to "Do Good Work." At present, 17 San Diego area departments participate, with four additional groups taking part in a separate contest at Vandenberg AFB.

Monthly winners receive a special Craftsmanship plaque, and display a large "Craftsmen of the Month" banner in their work area.

Salvage Yard Sales To Close on Fourth

There will be no salvage yard sales this coming Saturday (July 4) at either Convair or Astro plant.

Astro salvage yard at Kearny Mesa will be open for employee sales next Saturday (July 11) from 8 a.m. until noon and the Convair salvage yard at Plant 1 will be open July 18.

Helix Speaker Club Earns Nomination

Mount Helix Toastmasters Club, which includes 17 General Dynamics members, has been notified of its nomination for Toastmasters International's "Club of the Year."

For the past three years the club has won the District 50 "Club of the Year" award.

Executive committee members for the period covered by the nomination included General Dynamics employees Seymour Zeenkov, Jack Fisher, Glenn Vail, Warren Marsh, Durwood English and Roy Penney.

Mackley Will Head Systems Chapter

John R. Mackley, GD/Astro supervisor in divisions systems, has been named president of the San Diego Chapter, Systems and Procedures Association.

Norman Rubin of Astro is the new treasurer, while James E. Rutledge of GD/Electronics-SD and Bernard S. Gamson of Astro are new directors.

The group meets the first Tuesday of each month at the Marine Corps Recruit Depot and is open to all interested employees, Mackley said.

ASTRO WIFE WINS AWARD

An Astro wife, Regina Morin, whose husband, Robert O. Morin is in Astro Dept. 374-1, was honored last month with a James D. Phelan award for her one-act allegorical play, "Howl Like the Winnowing Wind." Mrs.

REVELERS ELECT

Emily Trapp of Astro's Dept. 142 has been elected president of the Revelers Club, a non-profit social group composed of single men and women between 21 and 41 years of age. Miss Trapp may be reached at ext. 2912 for information.

ARMY HONORS

David Stone, son of Astronautics' A. D. Stone (Dept. 195-0) has been named the outstanding trainee in Co. B, 3rd Battalion, 3rd Brigade, U. S. Army, at Fort Ord, Calif. Young Stone, former Astro employee, entered the Army three months ago.

Astro Wives Plan Anniversary Lunch

Astro Wives Club will hold a fifth anniversary luncheon July 15 in the Marine Room, La Jolla Beach and Tennis Club.

Social hour will be from 11 until noon when lunch will be served. Mrs. James Miller and Mrs. Anthony Vasques are hostesses. Call Mrs. Richard Besse, 274-0512, or Mrs. Henry Banas, 276-1861, for reservations before 5 p.m. July 13.

Junior Rifle Club Members Outpoint Senior Squad in Shoot

Young sharpshooters in Astro Rifleers' junior rifle club, made up of General Dynamics' teen-agers from Astro, Convair, and GD/E, are besting their elders after only a few months at the sport.

The junior rifle group, now numbering some 75 youngsters from 10 to 19, was organized under ARA auspices the first of the year and held their first competitive match in March.

"These youngsters have won 5 out of 8 team matches, plus many individual honors, and we're all mighty proud of them," said Astro's Dave Farrelly who coaches the Gold Squad, top scoring team.

In fact, they have progressed so rapidly that the four boys making up the competitive squad outpointed ARA's senior rifle team in IRC competition June 21 by a healthy margin.

The juniors scored 1,428 in a 50-yd., 3-position, 40-shot match to garner the large permanent challenge trophy for Astro and win individual belt buckle trophies for themselves.

Team members and individual scores were Richard Ellis, 376; John Tramposh, 346; Terry Farrelly, 354; and Robert Eaton, 352.

ARA seniors had to be content with second spot with 1,399 points. Their individual scores were Commissioner Bob Andrews, 337; Bill Prentiss, 347; Fred Jacobsen, 353; Ed Rosemann, 362.

The day before, June 20, juniors downed Camp Pendleton's junior team 1,759 to 1,650.

And, in the San Diego Junior Regional Rifle Tournament held the first weekend of last month (June 6-7) Astro Rifleers' juniors fielded three squads to take first and second in sharpshooter class and 8 of the 34 awards presented by ARA as well as one National Rifle Association award.

Robert Eaton won the NRA award for high score in sharpshooter class.

Two Convair daughters, Karen Miller and Shelley McGregor, shot themselves into top spots for ARA awards. Karen, 12, placed second in girls' overall scores in prone position. Shelley won first in both sub-junior prone and sitting competition.

An Astro daughter, Naomi Graudums, shooting with Poway Gun Club, was NRA overall high sub-junior.

Members of the three teams competing with juniors from 7 other county teams were: No. 1—John Tramposh, Robert Eaton, Bill Crosthwaite, David Farrelly Jr.; No. 2—Richard Ellis, Ronald Hill, Don Cognato, Terry Farrelly; girls—Karen Miller, Shelley McGregor, Peggy Bolton, Janice Smith.

Assistant juniors' coach, Ivus Ellis of Astro, supervised the boys' teams, while Laura Farrelly coached the girls. Other GD men acting as officials were Farrelly, official NRA referee; Rosemann, executive officer; V. Graudums, chief range officer; and Dick Zeich of Convair, chief statistical officer.

So many boys and girls want to join the rifle club that there are not enough adult instructors to go around, said Bob McGregor and Martin Miller, both of Convair, who head up the coaching staff.

A second platoon is being formed now and all interested GD people can be used in some capacity. People who have had previous experience in rifle instruction are urged to offer their services. However, all volunteers, with or without experience, are needed and will be given a course in basic marksmanship so they can assist full instructors on the range.

All interested are asked to contact Miller at ext. 715, Convair Plant 1, home phone, 276-4208; or Joe McLaughlin at Astro main plant, ext. 1513.

IRC Trapshoot Won by Astro

An Astronautics team topped the annual IRC trapshoot June 14 at Convair's Gillespie Field Range to take home the perpetual trophy.

Seven five-man squads representing San Diego members of the Industrial Recreation Council, and a visiting team from Los Angeles, competed in perfect weather conditions at the meet.

Members of the leading Astro team, who scored 230 out of a possible 250, were George Anderson, George Harbaugh, John Beamer, Don Walsh, William Reid.

Runner-up in the trapshoot was the Solar team, scoring 226. Convair's entry was third; North American Aviation from L.A., fourth; GD/Electronics, fifth; Astro, sixth; Solar, seventh; Ryan, eighth.

The visiting North American team led skeet competition and was awarded identical trophies as the Convair team, which stood first among San Diego contestants. Members of both teams received engraved bronze belt buckles, as did individuals on first and second teams in trapshooting.

Convair team members were Jim and Stephen Field, Bill Rickman, Gregg and Cleo "Red" Pharis.

Other skeet teams and their standings were: Rohr, third; Astro, fourth; Solar, fifth.

A busy day is in store for sharpshooters at the CRA range this coming Sunday (July 5). CRA members will hold their usual monthly club shoot and an open Troy-type trapshoot is set for 11 a.m.

Sports & Recreation

TAKING OVER — Installed to lead ARA-affiliated Serra Mesa Toastmistress Club are, from left, Dee Stivers, club representative, Elinor Slater, vice president, Scarlett Smith, president, and Beth Underkofler, secretary. All work for Astro or Air Force functions at Plant 71. Not shown, Margaret Barnes, treasurer.

Scarlett Smith Heads Toastmistress Club

Serra Mesa Toastmistress Club, an ARA-affiliated group, held its annual installation of officers last Saturday in the Terrace Room, Stardust Hotel.

Scarlett Smith (Dept. 190-0) heads the new slate of officers as president. Elinor Slater (Dept. 954-1) is the new vice president; Beth Underkofler (AFPR) secretary; and Margaret Barnes, treasurer. Dee Stivers, retiring president, is new club representative and is a member of the Air Force auditor general office staff at Astro.

Fran Leland (AFPR), supervisor of the Southwest Region, International Toastmistress Clubs, served as installing officer.

Serra Mesa Toastmistress Club meets at 7:30 p.m., first and third Mondays of each month at ARA Clubhouse. It is open to all interested ARA members.

Radio Club to Hold Picnic and Swap Meet

Astronautics Amateur Radio Club will hold its annual picnic and swap meet July 19 at ARA Recreation Area. Hours are 9 a.m. to 4 p.m. with all "hams," CBers, SWLs and their families invited.

Participants will furnish their own picnic lunches with tables reserved for all in the covered picnic area.

Station W6UUS (ARA) will operate portable from the area with all mobile stations invited to check in on 3825 KCS.

Further information is available through ARA Commissioner Don Jenkins, ext. 1057, or Bill Deane, ext. 141 at Sycamore Canyon Test Site.

Series of Riding Lessons Offered

Astronautics ARA's Horseman's Club has announced a new series of horseback riding lessons to open at 10 a.m. July 19 at Bradley's Bonita Valley Farms.

Sessions will continue at the same time each week for an eight-week period. Cost is $15 per person. Applications may be obtained at employee services outlets where fees may also be paid.

Astro Bridge Club To Resume July 10

Astro Bridge Club will take a "night off" from regular play this week, since Friday (July 3) is a holiday. Play resumes July 10.

June 12 winners were Stella Christy-Margaret Grindstaff (N-S) and Ceil McCullough-Norma Tuttle (E-W). Lucille Donan-Harmon Jonson (N-S) and Herbert Eager-Jerry McFarland (E-W) were winners June 19.

ARA Offers July 24 Dodgers-Giant Trip

Tickets go on sale today (July 1) at all Astro employee services outlets for a July 24 group trip to Los Angeles for a baseball game pitting Los Angeles Dodgers against San Francisco Giants.

Only 280 tickets are available and will be offered on a first-come, first-served basis.

Price per ticket is $6.50 and includes round-trip bus transportation, a baseball ticket, box lunch and soft drink. Buses will depart the Astro parking lots in front of Bldg. 2 at 5 p.m., going directly to Chavez Ravine. Passengers will be delivered to the same point on return.

Sheriff's Reserve Speaker Scheduled

Interest in applying special skills and talents found within ARA to public service has prompted ARA Explorers to slate a special 7:30 p.m. meeting July 15 at ARA Clubhouse.

At that time Lt. Bob Kurz of the San Diego County Sheriff's Reserve Unit will discuss search and rescue operations, show a film on this activity, and present a special display.

On July 18-19 the Explorers will conduct a special Mount San Jacinto back-pack from Little Tahquitz Valley. This is the first of a series of trips and primitive camping instruction sessions planned in preparation for more rugged excursions in the fall and winter season.

Mixed Doubles Keg Event in Prospect

Astronautics Management Club will stage a mixed doubles bowling event July 18 and 19 at Clairemont Bowl.

Handicaps will be based on 1963-64 book averages. If no book average is available, contact Forest Erwin, tournament director, at ext. 3509. Cost per couple will be $5. Two squads will bowl daily at 1 and 2 p.m.

SEA FISH FRY ATTENDED BY 150

An ARA Fishing Club expedition to Salton Sea, which included a fish fry, drew 150 persons recently. Ruth Fizgerald repeated as women's prize winner and Jim Lawyer led the men for the third time. Scott Taylor led the younger anglers.

COINEERS PLAN AUCTION NIGHT

Astro Coineers will hold a 7:30 p.m. meeting July 15 at ARA Club with a "Patriotism" theme. There will be free uncirculated coins, a drawing for a proof set and an auction.

ARA Calendar

(GD/Astronautics Recreation Association has some 40 activities in operation for employees. For information, call ARA Headquarters, ext. 1111.)

★ ★ ★

ASTRO DIVERS — Meets 7:30 p.m., July 8, ARA Clubhouse, featuring Mike Downs of Sea World on training sea animals.

CERAMICS — Instruction sessions, Tuesdays and Thursdays, 10 a.m. to 1 p.m., 7 to 10 p.m., in art room, ARA Clubhouse.

FISHING—Meets tonight (July 1) 7:30 p.m., with monthly fishing awards to be presented.

GARDEN CLUB — Meets 7:30 tonight (July 1), Floral Assn. Bldg., Balboa Park. Summer garden show, July 25-26, ARA Clubhouse.

GOLF — Starting times for Torrey Pines tournament July 11-12 available through ARA, ext. 1111, closing July 2.

GUNS — Open Troy trapshoot July 5, Gillespie Field Range.

HORSEMAN'S CLUB — Outing this weekend at Cuyamaca State Park. Summer riding lessons begin July 19 at Bonita Valley Farms, eight weeks for $15. Applications at employee services outlets.

MODELING — Informal model building sessions each Saturday, 9 a.m. to 4 p.m., ARA Clubhouse. Free.

ORGAN CLUB — Lessons at Ozzie's Music Store, El Cajon Blvd., six weeks for $8.

WATER SKI — Trophy meet July 3, 8 a.m. to noon, East Crown Point, Mission Bay.

Horsemen Slate State Park Outing

Astro ARA's Horseman's Riding Club will sound "saddles up" this weekend for a gala family outing at Cuyamaca State Park.

Assembly will begin at the Murphy Canyon horse area at 5:30 p.m. tomorrow (July 2). Horses will be trucked via leased van direct to a reserved camping area.

Families will supply their own food and camping gear. Sanitary facilities are available at the site. A $1 per family fee is required with State Park fees of 25 cents per day for people and horses. Many types of group activities are planned. Everyone is welcome, with or without a horse.

Arrangements are now being completed and Steve Berry, 281-4484, or Arnie Pilot, 583-0852, will provide details.

Bob Nicholas Wins Spear Fish Event

Bob Nicholas bagged 21 pounds of fish June 14 to take top honors in a spear fishing meet held by Astro Divers at Del Mar. Jorge Zorrilla finished second and Rod Johnson, third.

A regular meeting is slated for ARA Clubhouse July 8 with Mike Downs of Sea World slated to talk on training sea animals.

A scavenger dive at Alligator Head is slated for July 12.

Ball Fans Offered Cut-Rate Tickets

Astro ball fans can get discount tickets to the July 17 home game pitting Padres against Portland, courtesy of GD/Convair Management Club.

Reserved $2 seats now are on sale at employee services for $1.25. Deadline for purchase is July 14.

ASTROLENS PLANS "ANIMAL" PROGRAM

Because of the July 4 holiday Astrolens has changed its meeting time to 7:30 p.m., July 12 in the Photo Arts Bldg., Balboa Park. The program will involve lighting and photographing animals.

GOLF CLUB TOURNEY DEADLINE APPROACHES

Tomorrow (July 2) is the deadline for entering ARA's July golf tournament slated for Torrey Pines July 11-12. Call Joyce Oviatt at ext. 1111.

TOP SHOTS — Astro Pistol Club members recently placed first in national, first and second in regional, and first and second in local competitive events. Commissioner Bill Geopfarth holds bowl won in national event. Others in front row, Roland Schneider, J. S. Knutson, Al Schindler. In back row are Ralph Sanderlin, Harry Black and Don Smock. Roscoe Anderson and Warren Ranscht also competed.

National and Regional Trophies Won by Pistol Club Shooters

Astronautics ARA's Pistol Club, relatively small in numbers yet BIG in accomplishments, has recently chalked up an impressive array of victories in national, regional and local competition.

During the 1964 National Rifle Association—National Industrial Recreation Association Rifle and Pistol Matches, Astro's Team No. 1 finished first among 55 competitors. Team members were Al Schindler, Warren Ranscht, J. S. Knutson and Roland Schneider. With a team score of 732, the ARA foursome scored nine points better than their nearest rivals.

Earlier, Team No. 1 had copped regional (Region 7) honors, but gave up this distinction in accepting the national trophies. Which meant that Astro Team No. 2 which finished second took top spot in the regional. Team members were Ralph Sanderlin, Roscoe Anderson, Harry Black and Bill Geopfarth.

Individual honors in this regional event found Schindler in first with a 181 score. Ranscht finished third with a 180.

Rounding out a successful season, ARA teams finished first and second in San Diego Industrial Recreation Council matches June 14.

In this event, Team No. 1 (Schindler, Schneider, Ranscht and Sanderlin) fired a team score of 1,154-40x out of a possible 1,200. Taking second was Team No. 2 (Anderson, Black, Don Smock, Geopfarth) with 1,143-41x.

Which brought an impressive array of team trophies to ARA to be displayed in ARA Clubhouse as well as individual awards for those involved.

Hams Collect Points For Field Day Effort

Although tabulation of points will continue for some time, members of the ARA Amateur Radio Club were quite pleased with their efforts in support of the nation-wide ARRL Field Day held June 27.

Operating with three transmitters located near Astro's Sycamore Canyon site, the club contacted amateurs in the United States, Canada, Mexico and many foreign countries. They received six points for each contact.

John Creamer was Field Day chairman, with Al Rich, Reed Evans, Bill Roden, Don Jenkins and Ed Way acting as band chairmen.

Astro 'Muscle Men' To Appear in Show

The classified ad in a local paper stated merely: "Dogpatch needs musclemen," but it was enough to attract Frank Echevarria, director of the ARA Health Club.

Echevarria found Circle Arts needed men with muscles to enhance the production of "Li'l Abner" which opened yesterday (June 30).

In short order he rounded up Health Club members Jess Johnson, Leo Nichols and John Homola and took them over. They were recruited on sight, with Echevarria rounding out the lot.

Discount tickets (30 per cent off) are available through employee services outlets for the July 7 production.

Astro Tennis Tourney Set

July 18-19 and 25-26 have been selected as dates for the annual ARA Plant Championship Tennis Tournament with the tournament site yet to be selected.

Plans call for men's singles, doubles and singles consolation events, women's singles, and mixed doubles.

There will be no entry fee and the tournament is open to all ARA members. Deadline for entering is July 16. Contact ARA, ext. 1111, to enter.

This annual event, which runs all day of each of the four tournament days, traditionally draws the largest field of competitors to take part in ARA-sponsored net events. Last year, for instance, the field included more than 100 entries.

Water Skiers Slate Trophy Meet Friday

A trophy meet will be held between 8 a.m. and noon July 3 at East Crown Point by Astro's water skiers.

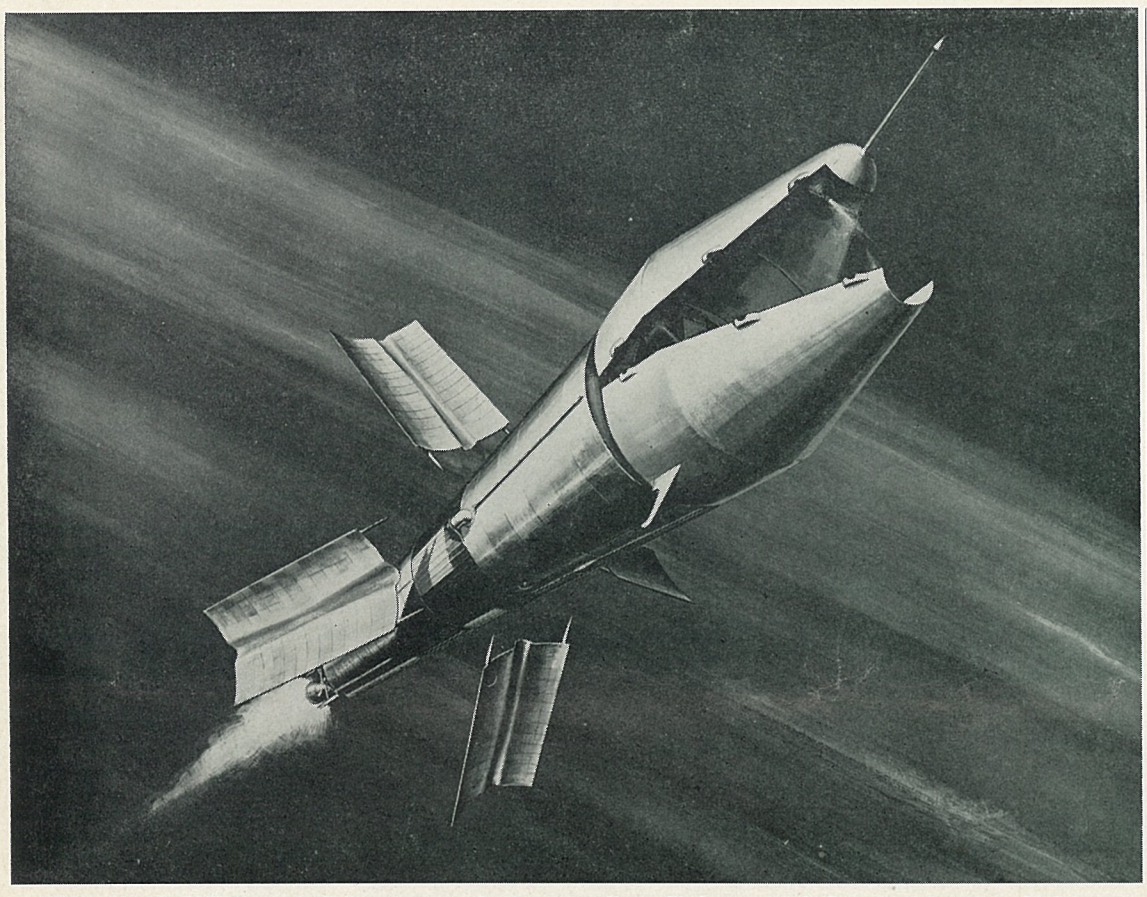
Trophies will be awarded via a drawing. Each skier receives one chance for each ski ride he takes during the period. For this event the club's nominal low rates will be reduced even further.

A potluck dinner will be held after the drawing. Those planning to attend are asked to coordinate dishes with Betty at ext. 4051, Plant 71, or 274-6941 evenings.

Beginning Organ Lessons Offered

Advanced lessons, styling and arranging of music will be key topics July 6 when the ARA Organ Club gathers at 7:30 p.m. at ARA Clubhouse.

Also on tap is a new series of beginning organ lessons offered at low costs through ARA affiliation. New classes open tomorrow night (July 2) at 7:30 at Ozzie's Music Store on El Cajon Blvd. Students pay only $8 for six weeks of instruction, with weekly sessions meeting for an hour and a half each.



"TRIMMING SHIP" — Artist's concept depicts pending flight test of Centaur during which space vehicle jettisons protective insulation as it leaves earth's atmosphere en route to orbit, eliminating unnecessary weight. First U.S. space vehicle to be powered in flight by liquid hydrogen, Centaur is being developed for NASA by GD/Astronautics under direction of Lewis Research Center.

Supplier Products Part Of Astro VE Seminars

A regular feature of GD/Astronautics' monthly value engineering seminars is the Supplier Product Display, held on Friday mid-way through each of the two-week workshops.

Coordinated by the material department value control group, displays provide an exchange of information between suppliers and VE students, as well as other GD/Astro personnel in procurement, engineering, etc.

Companies which receive invitations to exhibit are "specialty suppliers" in fields appropriate to GD/Astro's work. An attempt is made to achieve a balance between electrical and mechanical products at each display.

Since GD/Astro gives preference to local business, displays are chiefly from the San Diego or Los Angeles areas.

"We ask for displays that are a bit different from the usual sales promotion items," said R. N. Babcock, chief of vendor research and value control. "We emphasize that suppliers display specialties and concentrate on cost advantages, giving our designers and other key personnel the advantage of seeing firsthand the most current product information in their field of interest."

Suppliers like the idea. Letters from some have termed the GD/Astro programs the "best display opportunity in the industry." Some have achieved direct sales as result of displays, and at the very least, the exhibits serve to put companies with something of value in touch with the right people.

During the morning of a display day suppliers are available to VE seminar personnel, who present their projects and invite comment. Following this is an informal workshop session, which, in total, serves to underscore GD/Astro's emphasis on value control for suppliers, and encourage their interest.

Second phase, during the afternoon, is open to all GD/Astro people with a "need to know"—employees concerned with selection of materials, processes or component arts.

In advance of each display, notices are distributed through supervision, listing suppliers who will be present. Invitations also go to other General Dynamics divisions in the San Diego area, to GD/Astro customers, and to the Small Business Administration.

Normally, visitors at each display day number about 200.

"GD/Astro must have current knowledge of what products and processes are available," Babcock said. "Effective use of existing capabilities precludes the need to 'invent' an expensive alternative when the solution is already available."

Importance of value control is stressed throughout, beginning with an opening keynote address, normally presented by E. D. Heller, GD/Astro manager of cost reduction and value control.

Concerns Canvassed On Product Display

In preparation for a Supplier Product Display, about 400 companies in the Southern California area are canvassed on a six-month basis, and the 20 suppliers for each display are selected well in advance.

No displays will be held during July and August, but those for September through December are now being scheduled.

GD/Astro personnel wishing to suggest product areas for inclusion have been encouraged to contact Les King or Bill Hall, Plant 71, ext. 1470.

PALMDALE 'ALUMNI' GATHER JULY 19

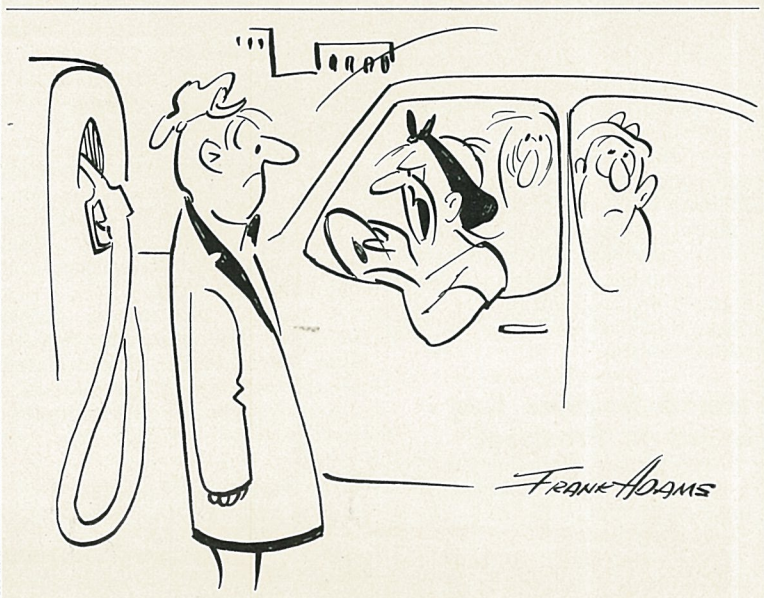
"Alumni" of Convair's former off-site facility at Palmdale, Calif., are looking forward to a renewal of friendship and exchange of reminiscences when they gather for their first reunion July 19.

About 150 are expected at the family get-together at ARA Recreation Area adjacent to Astro's Kearny Mesa plant. Gathering time is set for 10 a.m.

Families will bring their own picnic lunches or, if they wish, purchase sandwiches and soft drinks from the snack bar at the picnic grounds.

Sports and games will entertain adults and youngsters during the afternoon and playground equipment and rides in the area will occupy the small fry.

Jerry Schultz of Astro employee services, formerly in charge of employee services and recreational activities at the Palmdale site, plans to show films of Palmdale days.



"That new freeway that is supposed to get us to work quickly and quietly . . . Where do we barge onto it?"

Mobility

Corporate Office Opens at Cape

(Following are recent personnel transfers within General Dynamics. In parentheses are dates when individuals joined the company.)

Donald Scott from Fort Worth to Corporate Office on staff of **Dave Thomas,** assistant comptroller; **James Cowell** (1964) from Corporate Office to Electric Boat as material manager; **Grady Holt** (1954) from GD/Electronics to Corporate Office as manager at Huntsville; **H. T. Dillon** (1953) from Huntsville to GD/Astronautics; **J. L. Brooks** (1956) from GD/Electronics-San Diego to Pomona; **John Healy** (1960) from Astronautics to new Corporate Office at Cape Kennedy.

Howard M. Harvey (1952) from GD/Convair to GD/Astronautics engineering; **Jose G. Caero** (1958), **Daniel S. Cates** (1951), **Leo Charbonneau** (1957) from Convair to airframe design, GD/Fort Worth; **Howard B. Covington** (1956) from Convair to Fort Worth procurement planning.

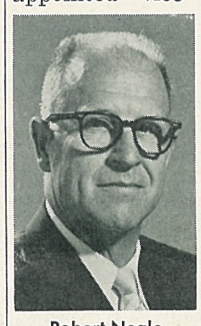
Gordon A. Smith (1963) from Astro (Plattsburgh) to structural design at Fort Worth; **Roland J. Fornataro** (1958), **Alan C. Phillips** (1952), **A. H. Ruddy** (1963) from Convair to Fort Worth airframe design; **Clayton S. Lang** (1956) from Convair to Astro engineering; **Bobby Helm** (1957) from Convair to maintenance engineering, Fort Worth; **James P. Ryan** (1953) from GD/Electronics-San Diego to Astro engineering.

Victor E. Korski (1947), **Harold Thornton** (1956) from Convair to Fort Worth's airframe design; **George F. James Jr.** (1956) from Convair to support equipment design, Fort Worth; **Donald C. Vandemore** (1963), **Peter E. Hoey** (1963), **Michael U. Fitzpatrick** (1963) from Astro to Fort Worth's structural design; **Dominick E. Palumbo** (1936) from Convair to Model 27 assembly, Fort Worth; **Paul J. LaFrenier** (1950) from Convair to Fort Worth flight; **Harold H. Langer** (1956) from Convair to Avionics systems at Fort Worth.

James E. Dale (1951) from GD/E-San Diego to Pomona engineering; **Josef A. Smole** (1940) from Convair to Astro engineering; **Stephen W. Babcock** (1956) from Astro to Pomona manufacturing technology; **P. Ralph Charlton** (1961) from Astro to Pomona engineering; **Howard A. Lockwood** (1947) from Astro to material, Pomona.

Neale Among New E-B Vps

Robert A. Neale, veteran General Dynamics executive, has been appointed vice president-operations for Electric Boat division by J. William Jones Jr., division president.



Robert Neale

At the same time, John V. Leonard was named vice president-engineering, Edward J. Behney, vice president-manufacturing, and Joseph D. Pierce, vice president-nuclear power.

Vice president for manufacturing at Canadair Limited from 1950 to 1957, Neale became vice president and general manager of Convair division in 1961 and subsequently was Corporate director, Operations Service. He was succeeded in this post by R. M. Hatcher last year and since then has been on special assignment.

Holt, Healy Dillon Shift

Appointment of Grady Holt as manager of the General Dynamics Field Office at Huntsville, Ala., and of John J. Healy to head the newly created Field Office at Cape Kennedy has been announced by E. H. Heinemann, Corporate vice president-program development.

Holt succeeds H. T. Dillon who is shifting to a position at Astronautics division.

A senior aerophysics engineer at GD/Fort Worth from 1954 to 1959, Holt most recently was systems planning director at GD/Electronics in Rochester. A graduate of Tennessee Polytechnic Institute, he holds a master's from University of Tennessee.

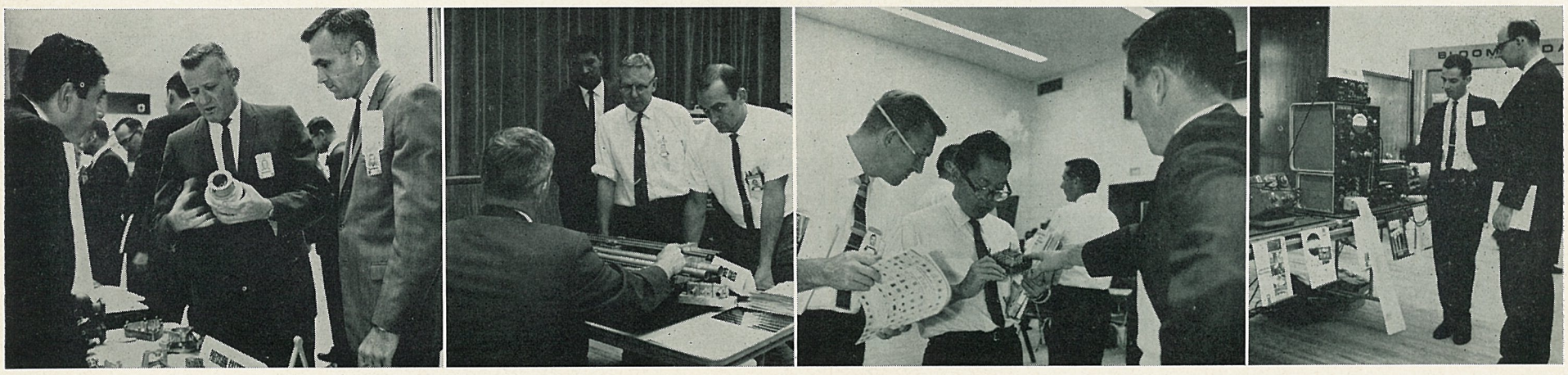
Healy, a former manager of the Orlando, Fla., office, and Astronautics project coordinator, originally joined the company at Rochester in 1960. A graduate of Manhattan College, New York City, he holds an LLB from St. John's University.

Dillon joined the company in 1953 at Pomona division and was a project staff engineer when he went to Huntsville to open the new office there. A graduate of San Diego State College, he served in the U. S. Army in World War II.

Dynamics Declares Three-Day Holiday

General Dynamics people are looking forward to a three-day holiday this weekend, as they join the nation in observing the Fourth of July.

Work will be suspended on Friday (July 3) except for necessary maintenance and security functions. Employees will report at usual hours on Monday (July 6).



ADDED ATTRACTION — Novel feature added to value engineering seminars at GD/Astronautics is Supplier Product Display during which students talk over cost reducing ideas with vendors. At left, H. E. Moose, GD/Astro director of material, center, discusses part with manufacturer, and R. N. Babcock, display coordinator.

GD

ASTRONAUTICS EDITION

GENERAL DYNAMICS NEWS

Vol. 17, No. 17 PUBLISHED BY GENERAL DYNAMICS CORPORATION Wednesday, August 12, 1964

HIGHEST HONORS—GD/Astronautics Air Force Plant Representative's office, headed by Col. Malcolm K. Andresen, center, recently received Talbot Trophy—highest award given for procurement management efficiency in the Air Force. Maj. Gen. Robert G. Ruegg, right, Assistant Deputy Chief of Staff for Plans and Logistics, presented award at Pentagon. At left is Col. Jack H. Alston, commander, Western Contract Management Region, of which Astro AFPR is a part.

Astro Plant Rep Wins Top Efficiency Award

The Air Force Plant Representative's office at General Dynamics/Astronautics has won the Talbot trophy—the highest award given for procurement management efficiency in the Air Force.

Col. Malcolm K. Andresen, AFPR, accepted the trophy in Pentagon ceremonies July 30 from Maj. Gen. Robert G. Ruegg, Assistant Deputy Chief of Staff for plans and logistics, acting for Gen. Curtis E. LeMay, Air Force Chief of Staff.

The award recognized accomplishments of the 188 civilian and military technicians assigned to the Astro AFPR from October, 1963, to April, 1964.

Col. Jack H. Alston, commander of the 13-state Western Contract Management Region of which the Astro AFPR is a part, proposed the award. He said it recognized outstanding service to private industry and the American public by Col. Andresen and his staff.

Special emphasis was placed on the assistance of Col. Andresen and his staff to Astronautics and its associate and sub-contractors and for their inauguration of an educational innovation in San Diego.

The latter involved a San Diego Junior Colleges curriculum under which certificates of accomplishment were issued participants. This program has been expanded (in the current semester) to presently include an Associate-in-Science degree in quality control and reliability. Quality assurance specialists from the AFPR helped develop both programs.

Working in close coordination with Astro's engineers and Air Force procurement agencies, the Astro AFPR helped guide revision of specifications and reduce costs resulting in a finalized figure for updating Atlas operational bases that was $43 million less than original estimates.

The Talbot trophy, presented semi-annually, was established by former Air Force Secretary Harold E. Talbot as a memorial to his brother, Air Force Gen. Nelson S. Talbot. It has been presented since 1953.

RD&E Depts. Personnel Earn Commendations For Cost Cuts

Employees of GD/Astronautics' research, development and engineering departments were honored last month with certificates of commendation for their contributions to the division's cost reduction and value control programs.

Presentations were made on behalf of President J. R. Dempsey, by R. C. Sebold, vice president—research, development and engineering.

During the first half of 1964, RD&E reported audited savings of $1.9 million through efforts of its members, achieving 189 per cent of the department's savings goal for that period.

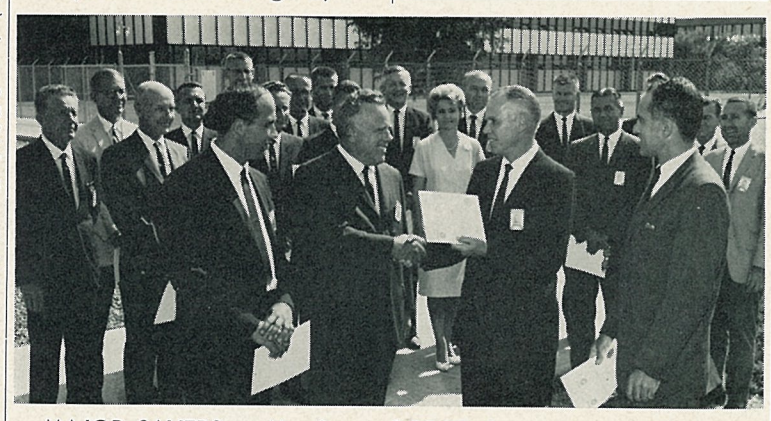
Certificates of commendation covered savings of $1,977,000, including $92,000 audited since the close of the reporting period.

Largest single cost reduction project was initiated by W. S. Williamson, Dept. 547-7. His project produced savings of $776,972 through a revision of test procedures and data reduction processes for telemetry cannisters.

J. A. Sindelar, Dept. 523-7, was initiator of a project with savings of $572,080 realized through the revision of handling methods and distribution of the Engineering Drawing Assembly and Release Records (ESARR).

Other RD&E personnel receiving certificates were W. K. Stromquist (two awards), C. W. Allison, G. R. Shumway, J. P. Moore, R. T. Flaute (two awards), D. J.

(Continued on Page 2)



MAJOR SAVERS — Members of RD&E departments at GD/Astro were honored recently with certificates of commendation for cost reduction and value control projects. In foreground, Vice President R. C. Sebold, second from right, presents award to W. S. Williamson who initiated project saving $1.9 million. Another major project was initiated by J. A. Sindelar, left foreground. L. G. Curtis, right foreground, is department CR/VC coordinator.

Astro to Offer Flu/Cold Shots

A voluntary program of flu/cold inoculations for employees is being planned for September and November at GD/Astronautics.

Aug. 21 is the deadline by which supervision is asked to submit to the medical section of industrial relations (Dept. 130-2), names of employees desiring inoculation.

The program consists of two inoculations, spaced two months apart. Employees who have been previous inoculated need only a single "booster shot," while others will require both injections.

Inoculations will be administered after working hours, at a cost of $1 per injection.

Dr. A. J. Bellanca, chief physician, said the vaccine used consists of both cold and flu virus, providing 50 to 90 per cent protection respectively. It contains no penicillin.

Mild reactions—sore arms, fever, muscular aches for 24 to 48 hours—may be expected by some, the doctor said.

He pointed out that cold and flu germs can be carried even by those not showing symptoms of the illness. In most cases, inoculation will eliminate this possibility.

Results of the inoculation program will be carefully observed by GD/Astro's medical section, and sometime in April (after the cold/flu season) questionnaires will be distributed to those receiving the injections. Answers, as to how many were protected from colds and flu, and how much time was lost from work due to these illnesses, will help determine effectiveness of the program.

Atlas Plays Key Moon Shot Role

Once again last month, GD/Astronautics' Atlas played a key role in another of the nation's space "firsts" with launch of the Ranger 7 spacecraft on its photographic excursion to the moon.

The launch July 27 from Cape Kennedy's Complex 12 was the 17th consecutive successful space launch in as many attempts for the reliable Atlas LV-3A.

After a perfect countdown, Atlas 250-D with its Agena second stage and Ranger spacecraft aboard, lifted from the pad only seven seconds after opening of the requisite "space window."

Such were the accuracy of the Atlas and Agena flights that Ranger would have achieved lunar impact, even without the midcourse correction which directed it to within ten miles of its target point—after a journey of 243,665 miles through space!

Superb climax of the flawless flight—more than 4,000 photos of the lunar surface—drew praise from President Johnson, who termed it a "tremendous technical achievement."

The Ranger program is directed by the National Aeronautics and Space Administration (NASA). Other space vehicle units, in addition to the GD/Astro-built Atlas LV-3A, are an Agena B second stage provided by Lockheed, and the spacecraft itself, engineered by Jet Propulsion Laboratory at Cal Tech.

Atlas 250-D was launched by GD/Astro (Orion Reed was test conductor) under direction of NASA's Goddard Space Flight Center, Greenbelt, Md. Preflight activity and the launch were responsibility of Goddard Launch Operations at Cape Kennedy, under direction of NASA's Lewis Research Center, Cleveland, Ohio.

GD/Electronics at San Diego is numbered among companies contributing to the mission. The GD division produced eight high-speed electronic printers for Jet Propulsion Laboratory's Space Flight Operations Facility. The S-C 3070 Electronic Printers were provided under a $185,000 contract. They translate coded information into electrostatically printed copy at speeds up to 5,000 words a minute.

Two more Ranger flights, with missions similar to that of Ranger 7, are currently scheduled for early next year. Next "giant step" in the lunar exploration program will be "soft" lunar landings to be made by the Atlas/Centaur-launched Surveyor spacecraft during 1965.

'Bon Voyage' Dinner Honors Ackerman

A "bon voyage" dinner was held recently at the San Diego Kona Kai Club honoring S. L. Ackerman, former GD/Astro vice president-electronic programs, who is now vice president-operations at GD/Electronics in Rochester.

Friends and associates presented Ackerman with a marble desk set featuring a miniature type "G" transponder; a painting of the Azusa Mark II site; and a pair of Satar silver cuff links.

Jim Crooks, Bob Jacobs, L. G. Chase, Howard Ikerd and Ron Rafuse teamed to present a humorous skit. Frank Hickey coordinated arrangements.

Cash Value Insurance Plan Goes Into Effect

General Dynamics has put into effect the supplemental group cash value life insurance plan for all supervisory and non-represented flat-salaried personnel who wish it, as a further expansion of the Corporation's improved insurance program.

All who signed for the additional life insurance are now covered.

Those who did not sign, may do so before Sept. 1 without a physical examination.

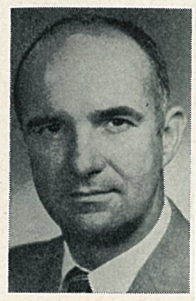
The optional life insurance plan is offered to augment present group life insurance and to provide permanent paid-up protection at retirement or termination.

Insurance is available in units of $5,000 up to a maximum of $30,000, dependent upon the individual's salary bracket. Employees must sign for the whole amount to which they are entitled. Premiums are based on amount of insurance and age of subscriber.

Eligible people may sign for the supplemental insurance at employee services during the remainder of this month.

Jack Bowers Named To Heinemann Staff

J. L. (Jack) Bowers, a former assistant chief engineer at Astronautics, has rejoined General Dynamics Corporation as a member of the staff of E. H. Heinemann, Corporate vice president-program planning, with responsibility for electronic systems.



Jack Bowers

Bowers originally joined the company at Convair in 1946 as a research engineer, developing search radar, magnetic guidance and missile guidance projects. Subsequently he was assigned to the Terrier project at Pomona Division as chief systems development engineer.

A graduate of Carnegie Institute of Technology, 1942, he was with Westinghouse Research Laboratories shortly before World War II and then with the Air Force from 1943 to 1946. He supervised electronic programs at Wright Field Special Projects Laboratory, Dayton, among them jamming transmitters and radio and radar controls for guided missiles. He has done graduate work at New York University and University of California, Los Angeles.

Named to the former Convair Corporate engineering staff in 1955, Bowers transferred to Astronautics the following year as assistant chief engineer for de-

(Continued on Page 3)

Use 'Minus Exemptions' To Raise Withholding

Employees may now request GD/Astronautics to withhold a certain per cent (from 15 to 23 inclusive) of their pay to meet potential tax liabilities brought about by recent Federal tax changes.

Requests for this optional withholding must be instituted on revised W-4 forms (Employee's Withholding Exemption Certificate) now available through employee services.

Forms received by Aug. 26 will be processed into hourly and salaried checks to be distributed Sept. 11. Those received later will appear in subsequent checks.

Since March when the Revenue Act of 1964 became effective, Astro has taken 14 per cent of each employee's withholding tax base (gross pay less $13 per week for each exemption claimed) for Federal tax withholding. From Jan. 1, 1964, through April, the rate was 18 per cent. Federal income tax due next April (for 1964) will be based on 18 per cent through the end of April and 16 per cent thereafter. Thus, some employees will find the amount withheld will not cover their tax liabilities (GD/NEWS, June 17).

Astro has recommended dropping exemptions to increase amounts withheld. Each exemption dropped means approximately $1.80 more of withholding per week. Until the optional withholding plan was adopted, employees could drop only as low as "0" exemptions.

Now employees may drop their exemptions to "0" and then specify withholding amounts ranging from 15 through 23 per cent.

Log Book Entries

Service Emblems

Service emblems due during the period Aug. 1 through Aug. 15.

Twenty-year: Dept. 718-0, J. F. Mayer.

Fifteen-year: Dept. 146-0, G. C. Eggen; Dept. 210-0, J. F. Crawford; Dept. 733-0, Mae L. Sinks.

Ten-year: Dept. 130-1, A. C. Reitmeier; Dept. 142-4, D. D. Wheeler; Dept. 148-3, Nellie A. George; Dept. 158-2, Antoinette M. Sullivan; Dept. 424-2, Domenic Skelly; Dept. 682-2, G. F. Randall; Dept. 718-0, Ambrose Brodus Jr.; Dept. 780-3, C. D. Johnson; Dept. 860-0, L. E. King; Dept. 953-3, R. W. Cleary; Dept. 954-5, L. W. Fitzgerald; Dept. 972-0, Margaret L. W. Wantuch.

DYESS AFB

Twenty-year: Dept. 392-2, O. I. Jones.
Ten-year: Dept. 392-1, J. L. Horn.

EASTERN TEST RANGE

Ten-year: Dept. 571-4, J. E. Garrett.

PLATTSBURGH AFB

Ten-year: Dept. 394-1, H. H. Campbell.

SYCAMORE

Twenty-five-year: Dept. 976-3, R. W. Whited.

Official Notices

UTILITY SHUTDOWN

Major electrical service shutdowns at Plant 71 are planned for the weekend of Sept. 5-7.

From 12:01 a.m. Sept. 5 until 12:01 p.m., Sept. 7, shutdown of 12 KV feeders Nos. 5 and 7 for substation exchange will affect Bldgs. 1, 2, 3, 26, 27, 33 and Bldg. 9 (pump house). Pump house shutdown will also limit domestic water availability during this period.

From 7 a.m. until 3:30 p.m., Sept. 5, 12KV feeder No. 4 will be shut down to permit substation cleaning. This will affect power to Bldgs. 13, 14, 15, 17, 28, 30 and portions of Bldg. 4 (Col. A-1/A-19 through AK-1/AK-19, Dept. 101, data processing wing, Col. Z/AD-10 through Z/AD-35, life sciences, electronic research, IMSSS).

Emergency power for telephone service will be provided.

D. E. Merriam
Plant Engineering Supervisor

Retirements

CARDWELL—R. W., Dept. 835-2. Seniority date, Oct. 20, 1955. Retired June 30.

NICKEL—Mary P., Dept. 143-2. Seniority date, October, 1950. Retired June 12.

WALSKI—John P., Dept. 148-1. Seniority date, Sept. 12, 1955. Retired April 30.

WALTHER—George P., Dept. 682-3. Seniority date, June 29, 1960. Retired July 10.

Personals

Your kindness and sympathy at the loss of my husband are more deeply appreciated than any word of thanks can ever express.

Mrs. Martin E. Stout
and family.

* * *

Your kind expressions of sympathy at the death of my husband, Harold (Dept. 142-1), are gratefully acknowledged and deeply appreciated.

Stephanie Perkins.

* * *

We deeply appreciate the many expressions of sympathy received from Management Club, GD/Astronautics, and our many friends there, during our recent bereavement.

The Carl W. Robeson Family.

Births

NULF—Son, Donald, 5 lbs., 10½ oz., born July 18 to Mr. and Mrs. Charles Nulf, Dept. 963-2.

WOOD—Son, David Edward, 8 lbs., 12 oz., born July 21 to Mr. and Mrs. Noel Wood, Dept. 835-1.

Deaths

ROBESON—Carl W., Dept. 365-1. Died July 25. Survived by wife, Barbara; son and daughter; brother-in-law, Samuel Lipsett, Dept. 319-0.

Astro Materials Men To Confer at Penn. U. Cryogenic Conference

Members of GD/Astronautics' materials research group will participate in the 1964 Cryogenic Engineering Conference Aug. 18-21 at University of Pennsylvania.

M. C. Campbell, Dept. 504-1, will present a paper, "Thermal Expansion Characteristics of Some Plastic Materials and Composites from Room Temperature to –253° C." "Thermal Conductivity of Reinforced Plastics at Cryogenic Temperatures" will be presented by J. F. Haskins and J. Hertz.

J. L. Christian and W. E. Witzell, with Abe Hurlich, manager of materials and processes, Dept. 504-0, will present "Evaluation of the Effects of Specimen Configuration and Testing Variables on Crack Propagation Properties." Hurlich will also serve as chairman of a session on metallic materials behavior.

New Alignment Cited For Computer Units Within Astronautics

Organizational realignment of certain data processing functions at GD/Astronautics has been announced by President J. R. Dempsey.

Scientific programming and analysis (Dept. 158) has been shifted to Dept. 595 with personnel reporting to Dr. R. M. Leger.

C. E. Diesen, formerly Dept. 158 manager, will serve as liaison between scientific programming and data processing operations and will assume responsibility for heading a computer selection and evaluation group. The latter will become a part of management systems.

Keypunching, tabulating and computer operations, including all technical, scientific and business applications, has been centralized under the data processing operations (Dept. 101) function.

General Dynamics NEWS

Published by General Dynamics Corporation, One Rockefeller Plaza, New York, N. Y. 10020; with editorial headquarters at 3302 Pacific Highway, San Diego, Calif. 92112, P.O. Box 1950, telephone 296-6611, ext. 1071. Logan Jenkins, editor-in-chief.

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GD/Electronics (San Diego) news contact: Helen Wood, 298-4641, ext. 1377, Plant 1, Bldg. 51.

Fort Worth Editorial Offices, between Cols. 71-C and 71-D, Assbly. Bldg., GD/Fort Worth, Mail Zone T-63, P.O. Box 748, Fort Worth, Texas 76101. Telephone PErshing 2-4811, ext. 2961. Staff: Dave Lewis, editor; Mary Beck.

Pomona Editorial Offices, Room 119, Bldg. 1, GD/Pomona, Mail Zone 3-13, P.O. Box 1011, Pomona, Calif. Telephone, NAtional 9-5111, ext. 6226-5279. Staff: Glenn Kehr, editor; Carol Colbert. Daingerfield news office, P.O. Box 947, Daingerfield, Texas. Telephone Lone Star, Texas, 2211, ext. 424.

* * *

Affiliated editions of General Dynamics NEWS are published in Rochester, N. Y., covering GD/Electronics and Stromberg-Carlson, editorial offices, 100 Carlson Road, HUbbard 2-2200, ext. 2555. Fred E. Voss, editor; and at Groton, Conn., covering GD/Electric Boat, editorial offices at Groton, HIlltop 5-4321, ext. 300 and 513, Joseph Tracey, editor.

Baugh Receives ES Recognition On Plant Posters

You may not know C. D. Baugh, but there is a good chance you'll notice his likeness displayed at one of 35 key locations throughout GD/Astronautics' San Diego operations this month.

Baugh, a Dept. 123 blueprint operator, is the initial subject selected to appear on posters supporting the Employee Suggestion program. The objective is to feature employees who have shown ingenuity, originality and completeness in submitting approved Employee Suggestions.

Posters will be displayed at Employee Suggestion box locations with a new poster going up the first Monday of each month.

Money savings alone are not deciding factors in selecting poster subjects.

For instance, Baugh's suggestion earned him $21.20, far below the average suggestion payment this year which is now $55.20.

However, his idea met other requirements. Baugh noted Neo Flow negatives (from which blueprints are made) often had to be re-run due to the appearance of weak spots. He worked out a method of applying light oil to the weak spots which, in turn, made it possible to use the negative rather than re-run it.

Baugh's idea was received as an Employee Suggestion on June 24, processed through the suggestion review and evaluation section, and paid in less than one month.

Abe Hurlich Gets New Post In Materials

Abe Hurlich has been named to a new post as manager of materials and processes (Dept. 504-0) at GD/Astronautics, reporting to W. W. Withee, vice president-engineering.

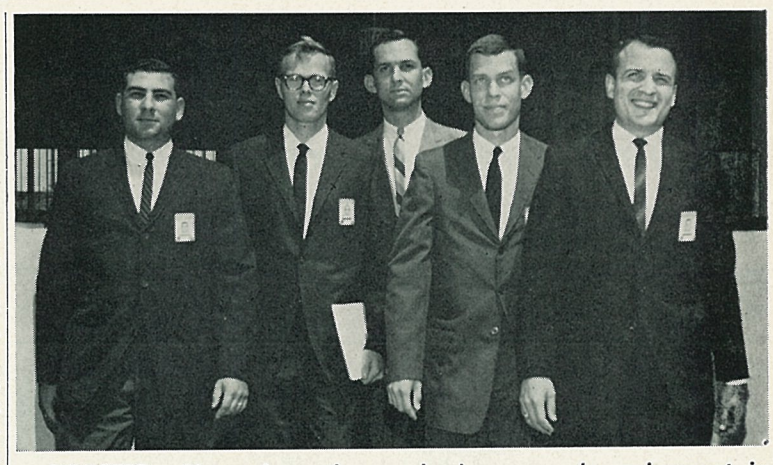
Abe Hurlich

J. F. Haskins (materials research), W. M. Gross (materials and process test services), and H. Rosenbaum (material and processes specifications) head groups under Hurlich in the new organization.

Hurlich attended secondary schools at Chelsea, Mass., and received a BA degree in metallurgical engineering at the University of Michigan where he also did graduate work.

He was chief materials engineer at the Watertown (Mass.) Arsenal in 1956 when he left to join Astro as a design specialist. Other assignments he has filled include that as a research group engineer, chief of materials research and senior design group engineer.

Hurlich is currently active in a number of technical societies and fills panel and board posts on a variety of consulting materials groups.



SELECTED—Pictured as they embark on year's assignment in GD/Astro Industrial Management Training Program are, from left, William M. Starr, James W. Bradley, Joe F. Thompson Jr., George S. Weislogel, and Ronald G. Taylor. Trainees will be assigned to major departments on rotational basis to provide them with over-view of total division operations.

Five Selected For Training In Industry Management

Five GD/Astro employees have been selected as this year's participants in the division's Industrial Management Training Program, and this month began rotational work assignments through major GD/Astro functions.

The program is under direction of M. V. Wisdom, director of industrial relations.

It is designed to improve management capability potential at GD/Astro by training qualified individuals, provide these individuals with opportunity for developmental experience, and to foster development of potential talent in the business management area.

Trainees are:

James W. Bradley, 25, who joined the company last year in Dept. 290-4. He holds BS and MS degrees from Ohio State University, and is planning work toward an MBA degree.

William M. Starr, 27, who holds a BME degree from City College of New York and an MBA from Cal Western. He joined the program from Dept. 380-1 and has been with GD/Astro since 1959.

Ronald G. Taylor, 26, who has also been Astro-employed since 1959. He holds a BSAE degree from Purdue University, and is on leave from an MS program. He was formerly of Dept. 261-1.

Joe F. Thompson Jr., 25, who joined the company last year after earning BS and MS degrees from Georgia Tech. He was formerly in Dept. 526-6.

George S. Weislogel, 25, who earned a BS at Ohio State, and an MS degree at Purdue. In 1962 he received the IAS-OSU technical paper award. He joined GD/Astro last year in Dept. 562-2.

For the next year, trainees will be assigned for varying periods to the budgets, contracts, engineering industrial relations, material operations, and material (procurement) departments on a rotational basis. These assignments are designed to provide them with an over-view of total division operations, through practical experience in key functions.

Besides this "on the job" instruction, trainees will be encouraged to seek formal education in industrial management fields at San Diego educational institutions.

RD&E Depts. Personnel Earn Commendations For Cost Cuts

(Continued from Page 1)

Hallman, R. E. Bradley, W. F. Chana (two awards), H. F. Hampy, Betty J. Upton, W. M. Gross, D. T. Griffin, R. L. Swisher, L. G. Curtis, S. D. Lepen, R. J. Reyburn, E. D. Doane, W. G. Curtiss.

Certificate winners not available for the presentation were L. J. Havilan, J. C. Byrne, J. H. Love (two awards), D. G. Moore, D. H. McCoy.

Certificates also went to RD&E employees at off-site locations. Cited at ETR (Cape Kennedy) were D. C. Larson (two awards), E. C. McClellan and E. H. Tubridy. WTR (Vandenberg AFB) recipients were L. L. Jella, F. H. Burris, R. A. Chrivia and H. F. Massey.

Astro Reliability Control Dept. Men Honored For Value Projects

Twenty-eight reliability control department employees at GD/Astronautics have received certificates of commendation for value control projects which have been implemented.

Total savings attributed to the group, during the second quarter of 1964, was $1,239,313.

P. I. Harr, director of reliability control, presented the certificates recently, lauding each man for his contributions and urging still further participation in this key division-wide effort.

Honored were Bill Lux, Sam Petcher, Steve Teggart, Eddie Bourgeois, Ralph Kemp, Roy Gilliland, Earl Smith, Ed Hutchins, Ollie Stewart, Jim Sugg, Darrell Lawyer, Fred Lay, Bob Roberts, Jack Cox, J. S. Curtis, Bill Olson, Dave Archibald, Bill Wade, Jim Tate, Walter Hageman, R. E. Dubel, Sterling Smith, Barney Behrens, Hal Story, L. I. Fredrickson, Bob Roscoe, Russ Medlock and John Sharmahd.

Wade has two projects implemented with total savings of $30,363. Sharmahd had the largest savings, $506,055, within the group, followed by Medlock with a total audited savings of $330,-163.

WITH THANKS — P. I. Harr, right front, congratulates John Sharmahd on value control project which saved $506,055. Looking on are other members of Astro's reliability control department presented certificates for projects implemented. Total represented in this group was $1,239,313!

'MAD, MAD WORLD' TICKETS ON SALE

Four hundred of the best reserved seats at the Aug. 30 evening showing of "It's a Mad, etc., World" at Cinerama Theatre are available to GD/Astro employees at reduced prices. Tickets (normally $2.50) are now on sale at employee services outlets for $2.

Divisions Battle For Safety Lead

For the first time since the start of General Dynamics divisional safety contests, Pomona has been nudged out of the lead in one of the categories.

Safety Standings

Division achieving best record:

Current month: (1) Astronautics division, (2) Pomona, (3) Convair. Year to date: (1) Pomona, (2) Electronics-Rochester, (3) Convair.

Division achieving best improvement:

(1) Pomona, (2) Canadair, (3) General Atomic.

Astronautics, with its first "call" of the race, has taken over No. 1 in "best record of the current month" with Pomona second and Convair third.

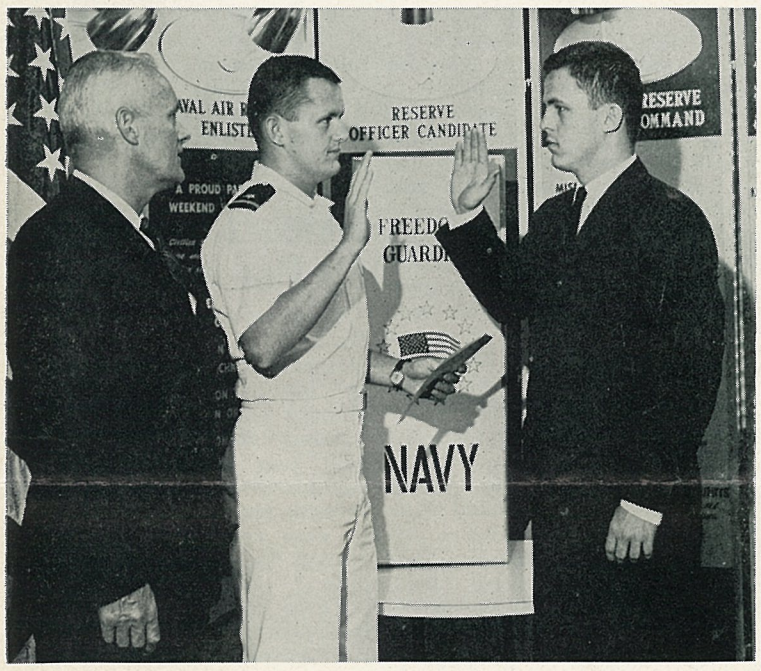
Pomona, however, through June continued to lead all other categories, "year to date" and "best improvement."

Since the exciting race began, the "place and show" positions in the current months have been held by a variety of "horses," with divisions jockeying for a shot at the lead. Near the top at one time or another have been Stromberg-Carlson, Electronics, Material Service, Fort Worth.

The best "year to date" standings have remained constant since the barrier was lifted, with Pomona leading Electronics and Convair.

Meanwhile, in the "best improvement" category, consistently led by Pomona, Canadair currently has moved up to second place and General Atomic (with its first call of the race) is running third.

Algie A. Hendrix, Corporate vice president-industrial relations, reported that during June six divisions (Astronautics, Pomona, Convair, General Atomic, Electronics-SD and Electro Dynamic) achieved perfect safety records. Corporate-wide, severity is down 52 per cent and frequency improved 21 per cent.



ALL NAVY — Ens. Patrick W. Sullivan, USNR, administers enlistment oath to brother, Airman Robert E. Sullivan, making latter fourth Navy man in Sullivan family. At left is their father, Capt. Patrick J. Sullivan, USNR, a vice president of General Dynamics Corporation, who witnessed ceremony at Naval Air Station, Floyd Bennett Field, N.Y. A third son, Lt. (jg) Dennis P. Sullivan, is member of Fighter Wing VF 142 aboard USS Constellation. Ens. Sullivan is stationed at N.A.S. Adak. Latest Sullivan to join Navy is Georgetown University graduate and staff member of Long Island Star Journal. Elder Sullivan was World War II Navy flyer.

GD/Convair-Built F-106, T-29 to Serve In Flight Evaluation of Systems For F-111

Two GD/Convair-built workhorses—an F-106 and T-29—will be used to flight test certain F-111 systems.

The F-106B, a two-seated trainer version, will be used initially in evaluation tests of the radar altimeter and terrain-following radar systems, built by Minneapolis-Honeywell and Texas Instruments. Flights are already in progress.

Modification is in progress on the T-29 (military version of the Convair 240). It will serve as a flying test bed for evaluating four of five F-111 systems from early in August through 1965.

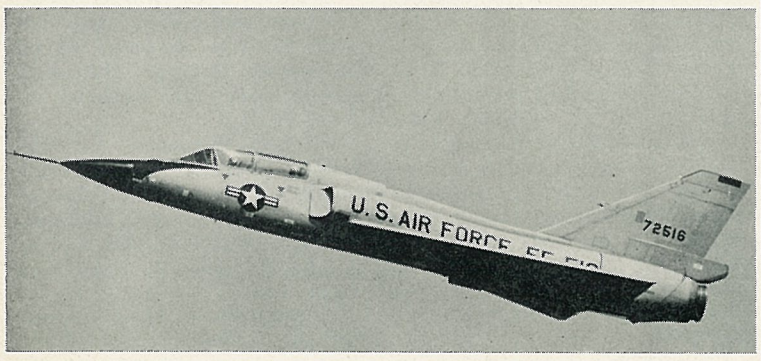
Modification of the two aircraft was carried out in modernization and development departments. E. E. Finch is manager.

Modifications on the F-106 mainly consisted of replacing wiring and attaching points for external pods to carry equipment and instrumentation.

The radar altimeter is used to determine the airplane's height above ground. The terrain-following system is used to automatically control the airplane at very low altitudes above the terrain while the plane follows a contour of the earth's surface.

Flights in the F-106 have been made by R. L. Johnson and W. H. Harse of GD/Fort Worth flight department.

Roger Scott is chief of pre-F-111 flight test, and C. B. Cox is flight test engineer on the project.



GOING UP — F-106 modified at GD/FW is being used in evaluation tests of certain F-111 systems.

Divisional Transfers

(Following are recent personnel transfers among General Dynamics divisions. In parentheses are dates when individuals joined the company.)

Herbert Erbe Jr., (1953) from Astro to GD/E-Rochester F-111 program; **Charles A. Benner** (1948), **Richard C. Stettler** (1953), **Loren D. Harber** (1961) from Astro to Convair engineering; **Joseph Falcone** (1961) from Astro to GD/E-Rochester F-111 program.

Edward J. Beveridge (1963), **John C. Lievens** (1951), **Robert W. Squire** (1957) from Astro to Convair engineering; **Raymond D. Frazier** (1958) from Astro to Fort Worth material control; **Alvin L. Burger** (1962), **Edward J. Porter** (1962), **Stanley E. Ament Jr.** (1962) from Astro to Convair engineering; **Robert L. Gentry** (1960) from Astro to GD/E-Rochester F-111 program.

Charles W. Washam (1956) from Astro to Fort Worth procurement planning; **Arthur W. Bluder** (1942) Astro to Convair engineering; **Wade Bryn** (1963) from Pomona to Fort Worth purchasing; **Oliver F. Oldendorph** (1949), **Clement B. Wells** (1950) from Astro to Convair engineering; **Bennie T. Whatley** (1961) from Astro to GD/E-Rochester production control.

Oceanography Team Briefed

Oceanographic studies and facilities at GD/Electronics, Rochester, N. Y., were on display when that division hosted the summer meeting of the Oceanography Task Team of the National Security Industrial Association last week (Aug. 4-5).

The some 70 attendees visited GD/Electronics floating laboratory, the self-propelled General Dynamics barge, Darius, moored in the center of Seneca Lake and inspected the half-million gallon indoor tank.

Representing the Navy at the meeting were Rear Adm. C. A. Karaberis, director of anti-submarine warfare programs for the Office of Naval Materiel; Rear Adm. A. S. Born (ret.); Rear Adm. P. D. Gallery (ret.); Rear Adm. M. E. Garrison (ret.); Rear Adm. Denys W. Knoll, Oceanographer of the U. S. Navy; Rear Adm. Edwin C. Stephan (ret), former Oceanographer of the Navy.

ASTRO ART SECTION WINS HIGHEST HONOR

Work of GD/Astronautics art section (Dept. 126) under Manager S. B. Hodge has received international recognition with inclusion of four posters in the current issue of Graphis (International Journal of Graphic Art and Applied Art).

The Swiss-published, tri-lingual journal chose the Astro art from among award-winning pieces shown at the 18th annual Exhibition of Advertising and Editorial Art in Los Angeles, for inclusion in a feature, "Western American Advertising Art."

Critics' reaction to the Astro posters is illustrated by tracing the path of the work to its publication in Graphis: some 5,000 advertising art entries were submitted to the Los Angeles exhibition; about 500 were chosen for hanging; and finally, the magazine reproduced 56, including the Astro quartet.

Of the posters illustrated, Hodge served as art director for three, with Phil Kirkland as designer. The fourth was directed by Tom Suzuki, with Burt Brockett, designer.

NUCLEAR SOCIETY HEARS GD/FW MAN

W. E. Dungan, GD/Fort Worth Dept. 64-2, recently spoke to the American Nuclear Society on "Advances in Neutron Dosimetry."

People Mobility

Bowers, Meador, Ackerman, Lombardo, Johnson Shift

(Continued from Page 1)

sign. After four years with the Atlas program he left Astronautics in the spring of 1960 to become vice president and general manager of the Electronics Division of AVCO, engaged in the development and production of military electronics equipment.

* * *

MEADOR REJOINS CONVAIR DIVISION

Chester L. Meador, vice president-contracts for General Dynamics Corporation since 1961, has been named to head up sales and contracts at Convair division.

Meador's appointment as GD/Convair vice president-sales and contracts was announced late last month by Division President J. H. Famme.

During his years with the Corporation Meador has been responsible for sales contracts both for Corporate Office and the former Convair division.

Chet Meador

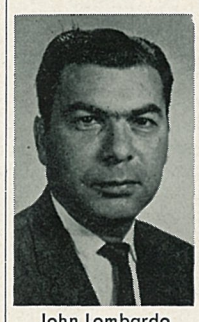
Meador, a native Missourian, joined Consolidated Aircraft Corp. at San Diego, Calif., in 1940. Two years later he transferred to Fort Worth division where he was supervisor of estimating and pricing. After two years service in the Army he was assigned to contracts at San Diego in 1946. In 1950 he was named Convair San Diego contracts supervisor and executive assistant to contracts manager.

In May, 1953, he was appointed assistant to the director of contracts in General Office; two years later became assistant director of contracts; and in March of 1960 was named Convair director of contracts. He went to Corporate headquarters in New York City the following year.

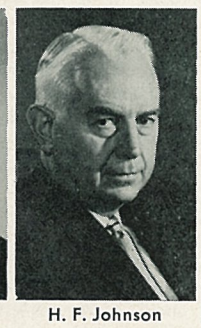
* * *

LOMBARDO NAMED S-C EXECUTIVE VP

Expansion in the scope of operations of the Stromberg-Carlson division and appointment of an executive vice president have been announced by Stromberg-Carlson president John H. Voss.



John Lombardo



H. F. Johnson

John L. Lombardo, veteran of more than 20 years in the field of communications and electronics, goes to Stromberg-Carlson in this newly created position from San Diego where he had been general manager of the GD/Electronics facility.

S-C, which has principally been a telecommunication manufacturing firm serving the Independent telephone industry, has now been assigned by Corporate headquarters additional responsibilities for commercial and industrial electronic products.

Addition and introduction of these new lines of products places a greater load on management, Voss said, as he also announced appointment of Hershall F. Johnson as controller.

Johnson, who had been controller of GD/Electronics in San Diego, will head an expanded controllers operation which will include planning, forecasting and statistical information. He will be assisted by Robert L. O'Connor, who had been serving in this position for the telecommunication operation.

Lombardo will assume primary responsibilities for engineering, manufacturing and the smooth introduction of new products.

* * *

ACKERMAN BECOMES ELECTRONICS VP

Richard A. Wilson, president of GD/Electronics at Rochester, N.Y., has announced appointment of Sam L. Ackerman, formerly Astronautics vice president-electronic programs, to the post of GD/E vice president-operations. The position is a new one, combining responsibility for all of the operating functions — research, engineering, manufacturing, and quality control. Consolidation of these functions under one executive officer is an important step in strengthening the organizational structure of this division, Wilson explained.

Sam Ackerman

Ackerman, originally from New Jersey, attended schools there, leaving to enter service as an officer in the Army Signal Corps during World War II. After several years in the electronics industry, he was recalled to active duty in Korea. Subsequently, he served with the Air Force and then with RCA at Patrick Air Force Base in Florida.

* * *

PRIM IS APPOINTED ASTRO PROGRAM HEAD

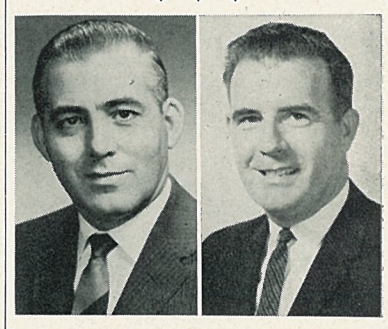
Donald C. Prim, veteran electronics engineer and executive, has been named program director—electronic programs at GD/Astronautics by President J. R. Dempsey.

Don Prim

Prim, a graduate of Indiana Technological College, was a developmental engineer with Ford Instrument Co., Line Material Co., and at Leeds and Northrop Co. before joining General Dynamics in 1951. In various electronics assignments he has worked on the Doran tracking system, Atlas radio-inertial guidance, Atlas weapon system support and checkout equipment, Azusa Mark I and II, Glotrac and Satar.

He became manager of trajectory measurement and control—electronic programs in 1962 and the following year was named assistant program director in the same project office.

* * *



Grady Holt, left, now head of the Corporate field office at Huntsville, Ala., and John Healy, right, who is manager at the Cape Kennedy (Cocoa Beach, Fla.) office.

Other Corporate field office managers include: **F. Robert Heyner,** Cambridge (Mass.) office; **George J. Vila,** Cleveland, O.; **J. A. Bothwell,** GD representative, Colorado Springs; **Fred deFrance,** manager, Dayton, O.; **John Fitzpatrick,** Houston; **R. W. Wright,** Langley (Hampton, Va.); **James H. Mason,** Los Angeles; **Edwin Reynolds,** Omaha; **Paul Brandt,** Red Bank (Red Bank, N. J.); **John King,** Rome, N.Y.; **J. J. Walden Jr.,** Sacramento, Calif.; **Bob A. Roberts,** San Antonio; **Clifton Brewer,** San Bernardino, Calif.

TOPS — Carolyn Buman, Astro Dept. 512, took honors for best arrangement and best corsage, and also won Ona Mae Carroll Memorial Award presented by Arnold Carroll in memory of his wife.

Fruit, Flowers Fill Clubhouse

ARA Clubhouse auditorium was banked with fruit, flowers and vegetables—including over 1,000 dahlia blooms—when General Dynamics Garden Club held its summer show there July 25-26.

Judges were confronted with a total of 354 entries in 49 classes!

LaVonne Splinter, Convair Dept. 2-0, received the club trophy for best dahlia blooms in the show, while her husband, Charles, Astro Dept. 759, took top honors for the best three medium blooms.

The Ona Mae Carroll Memorial Award for the best arrangement went to Carolyn Buman, Astro Dept. 512, who also won best-of-show honors for her corsage entry.

Arnold Carroll of Astro won two best-of-show awards including that for three miniature ball dahlias and for three pom pons. An award for the smallest bloom entered went to Henry (Convair Dept. 141) and Margaret Boyd, and Evelyn Finley, Convair Dept. 14-4, entered the largest bloom.

Astro's G. Short, Dept. 673, took top award for vegetables, and Ray Sharman, Astro Dept. 250-1, entered the best fruits.

In the children's division, Donald McMillan, son of Donald L. McMillan, Astro Dept. 143-6, won best-of-show honors.

Other Convair winners included Clayton Finley (wife, Evelyn, in Dept. 14-4), Gene Zimmerman, Dept. 131, his wife, Grace, and son, Dennis.

Astro winners included Martin Walsh, Dept. 718; R. H. Moore, Dept. 832; Mary Short, Dept. 673 (ret.); J. R. Buman (wife, Carolyn, in Dept. 512); C. V. Spear, Dept. 141-2; Helen Spann, Dept. 953, her son, Bill, husband, Ken, and Florence Baldwin; Yvonne McMillan (wife of Donald), and son, Anthony; Mike Alianelli, Dept. 780, daughter, Nancy, son, Richard, and J. Asaro.

CONVAIR'S STUCKEY HEADS QC SOCIETY

L. C. Stuckey, GD/Convair supervisor in inspection, was installed as chairman of the San Diego Section, American Society for Quality Control, at a July 25 dinner-dance ceremony at Point Loma Inn.

The society's national president, R. L. Fiaschetti of North American's Space and Information Division, was present to conduct the installation.

Other officers seated for the coming year were L. I. Fredrickson of GD/Astro, vice chairman; H. H. Mishler, also Astro, secretary; and T. F. Reynolds of Cubic Corp., treasurer.

Stuckey succeeds M. R. Seldon of Astro, outgoing chairman, who was commended at the meeting for his efforts in raising the standards of the society during his term in office.

Hunter Safety Class to Begin

General Dynamics sons and daughters may sign now for hunter safety courses in progress at the CRA Gun Club.

Registration may be made by leaving names with Frank Marchant at Gillespie Field, phone 448-1825.

Each course runs for three consecutive Saturday mornings, from 9 a.m. until noon. Intensive training is given in the handling of rifles and shotguns, ammunition, and safe practices on the rifle range or in the field.

Lectures will be supplemented with films and actual firing practice on the Gun Club ranges. A comprehensive written exam is given at the final session. Certificates and brassards are given for satisfactory completion.

Qualified Convair and Astro men are participating as instructors.

The course is offered so that young people under 18 can obtain hunting licenses in compliance with California state law. (Effective July 1, the law was changed from 16 to 18.) However, the instruction is open and recommended to all beginners of any age.

Students are asked to use their own guns, if at all possible. Only charge is 50c a session.

Classes are limited to 14 persons. However, courses will be conducted continuously to take care of all who sign. There is still time for a complete course before the hunting season opens the first part of September.

Rogue River Trip Cancelled

Annual "rough water" voyage down the Rogue River has been cancelled this year by the Convair Management Club-sponsored Air Explorers Squadron No. 340.

The boys and three adult leaders, Jim Megargee, squadron adviser; Gene Boyd, and Nate Wells, had originally planned to leave this Friday (Aug. 14) for the Oregon city of Grant's Pass, start of the river trip. However, unforeseen circumstances forced cancellation of plans.

In lieu of the two-week journey, boys will probably make shorter trips nearer to home. In sight is a week of fishing and surfing along Baja California coast, a repeat of the Fourth of July weekend to San Miguel, north of Ensenada.

If enough wish, a mountaineering weekend in the Sierra will be arranged, said Megargee, as well as a variety of other activities dependent upon the Explorers' interests.

All General Dynamics sons, between the ages of 14 and 18, are eligible and welcome to join the GD squadron. Meetings are held on Tuesdays, 7 p.m., at Squadron 340 headquarters at the seaplane ramp along Harbor Drive. Next meeting will be Aug. 25.

For information, call Megargee, Plant 19, ext. 641.

ASTRO LENS PLANS QUARTERLY CONTEST

Astro Lens will hold its third quarterly competition for black and white prints and color transparencies at a meeting Aug. 16, 7:30 p.m. in Balboa Park's Photo Arts Bldg. The session is open to all San Diego-area General Dynamics employees, although only club members may enter the contest.

Convair Will Open Salvage Aug. 15, 29

Convair salvage yard adjacent to Gate 5 at Plant 1 will be open the mornings of Aug. 15 and 29 for employee sales.

All General Dynamics people are permitted to shop at the salvage yard between 8 a.m. and noon upon presentation of ID cards.

WELL PADDED — Astro has introduced new type polyurethane foam material with special surface film. Material may be used to cover work benches, stock shelves, transportation carts, etc., or may be used in reusable containers like those containing electronic components above. Andrew Kirinich, left, autopilot manufacturing area assistant foreman, shows nylon gloves packaged with critical items to Don Leja, materials handling and packaging engineer, and Thelma J. Colvin, electronics assembler.

New Easy-on-the-Eye Material Will Pad Benches and Shelves

GD/Astronautics is the first Pacific Coast industry to adopt polyurethane foam with a "new look" for its operations.

The "new look" is present in the form of fused elastomeric polyurethane surface film coating the sides of regular foam, the old protective stand-by.

The result is a remarkable surface resistant to abrasives, cuts, tears, gasoline, oil and most solvents as well as non-toxic, non-allergenic and thermoresistant to cold.

And the beige finish Astro has selected is easy on the eye.

Available in sheets from three-eighths to one-inch thick, the material may be cut to size or ordered pre-cut by the manufacturer with rolled, heat-sealed edges.

In this form Astro uses it as padding for work benches, stock room shelves and transportation carts when shock and vibration must be kept at a minimum to safeguard sensitive parts and components. It replaces older types of foam which often collected particles and chips that could damage surface finishes.

New at Astro is the use of this material in making special protective envelopes of various sizes and shapes, complete with snap fasteners. They guard machined surfaces in machine shop and fabrication or encase ring couplers, potted assemblies, components, etc., in electronic manufacturing.

Each envelope is reusable with the originating department number affixed permanently.

Astro's material handling and packaging engineering (Dept. 405) under C. C. Harper is coordinating use of this material in all operations.

Seminar Discusses Design Improvement

A seminar in "Improving Electronic Fabrication Design," recently completed at GD/Astro, is a current aid in achieving the division's total goal of product improvement.

Conducted jointly by electronic process control and educational services for personnel in electronics design and production areas, the seminar was coordinated by Will Weidenfeller, Dept. 130-3, and Rich Kolek, Dept. 141-2.

The seminar program was originally suggested by J. A. Hughes, assistant chief engineer, Dept. 963-1, and may be expanded in the near future to benefit other GD/Astro design groups.

Teams of seminar participants concentrated on actual production situations during five sessions totalling nine hours' effort.

Astro Earns Thanks Of Altus Community

ALTUS AFB — GD/Astronautics employees here have received a big community "thank you" for recent gifts to two worthy causes.

Through their Con-Trib-Club Advisory Committee, employees gave $975 to the Jackson County Memorial Hospital. Funds will provide a new all-purpose emergency room table and operating light.

Second gift was $700 to the Jackson County Christmas Seal program which put the annual drive "over the top" for the first time.

Glenn Berg, Advisory Committee chairman, Frank Campbell and Harry Hamerdinger, committee members, made the presentations.

REGISTRATION OPEN FOR JC STUDENTS

Registration for new students at any of the San Diego Junior Colleges begins tomorrow (Aug. 13) at the Admissions and Operations Center, 835 Twelfth Ave. The office will be open daily between 8 a.m. and 8 p.m. Continuing students were to register earlier this week.

Astro Reservists Command AS Ships

Change of command ceremonies June 19 for two San Diego-based Naval Reserve antisubmarine training ships found GD/Astronautics men assuming commanding roles.

Cdr. Richard J. Prendergast (Dept. 633-0) relieved Cdr. Richard J. Pabst as commanding officer of the USS Shields Reserve Crew.

LCdr. Harry F. Spuehler (Dept. 110-0) took command of the destroyer escort, USS Wiseman Reserve Crew, replacing Lcdr. Leland E. Bolt (Dept. 581-4).

Both ships currently have openings for qualified petty officers holding shipboard rates. LCdr. Spuehler, ext. 2263, or Cdr. Prendergast, ext. 3956, will provide information.

Mayor Has Praise For Astro's McNew

GD/Astronautics employees normally manage to become good citizens wherever their work carries them as a recent letter to President J. R. Dempsey seems to emphasize.

Donald G. Mauldin, mayor of the City of San Bernardino, wrote to Dempsey lauding services rendered by B. G. McNew, Astro resident manager at Norton AFB.

Mayor Mauldin called McNew "a man of energy and resourcefulness" who has performed many services to his city and community, especially in youth work. "This man is a credit to your organization," Mayor Mauldin concluded.

(McNew was subsequently presented a key to the City of San Bernardino by his Honor.)

Pot Increases In Trapshoot

It was a hot day, and a hot match, July 26 at Gillespie Field Range when 11 determined trapshooters vied to break 50 straight for the big prize in the Troy shoot, sponsored by Convair Gun Club.

Herb Langfeldt of National City and John McCully of Coronado went straight in the 16-yd. but flubbed the handicap. Now the overall pot stands at $241.

Langfeldt and McCully's take was $17 each. Jim Prewitt of Spring Valley made $8.25 for high handicap score of 47.

★ ★ ★

The night ATA registered trapshoot the preceding Friday evening, July 24, brought out a larger crowd, 65 shooters and spectators.

Fifty targets were thrown for 16-yd. and 50 for handicap but doubles was cancelled for lack of time. As it was, the two events lasted until 11:30 p.m.

Carl Haynes and John Smith of San Diego and L. P. Johnson of Chula Vista all shot 45s to tie for first in Class A. Jim Prewitt of Spring Valley won Class B with a 45. Don Estes of Lakeside stood high in Class C with 46.

Ada Johnson's 47 was good for first in Class D and high score in 16-yd. She shot her first string of 25 straight then missed three in the second 25.

John McCully and Estes tied with top handicap scores of 47. Ada Johnson was high lady with 44.

Travelers to Meet For Final Briefing

Final briefing for all General Dynamics travelers to Mexico will be next Tuesday (Aug. 18) at 7 p.m. in the Convair executive dining room, Pacific Hwy.

James Hardison of GD/Convair, tour conductor, will give last-minute instructions on visas, vaccinations, money exchange to be sure everything is in order before the Aug. 21 departure date.

There are still openings for three more persons, said Hardison. Anyone interested is urged to attend the meeting.

The group will leave the Bldg. 19 parking lot for Mexicali at 1 p.m. Aug. 21 and return home Sept. 6. During their more than two weeks in Old Mexico they will visit Guadalajara, Mexico City, Cuernavaca, Taxco, and Acapulco.

Ernest Allen Sets Top Grade in Class

Ernest W. Allen of GD/Astronautics' material handling and packaging engineering (Dept. 405) has been lauded for recording the top grade in his class during recent specialized training.

Allen attended the Joint Military Packaging Training Center course at Aberdeen Proving Grounds, Md. Over a four-week period Allen attended courses in "Preservation and Intermediate Protection" and "Packaging and Carloading."

With Astro since 1957, Allen received a bachelor's degree in mechanical engineering from the University of Texas.

'Trapshooting Tips' Movie on Schedule

A film, "Trapshooting Tips," has been obtained by CRA Gun Club for five showings to all interested General Dynamics people over the weekend of Aug. 22-23.

Priming gunsmen for the coming hunting season, the movie will be run at Gillespie Field Clubhouse at 4, 6, 8 p.m. on Saturday (Aug. 22) and at 3 and 5 p.m. the next day (Aug. 23).

A donation of 50 cents each will be collected from adults. Children under 16 will be admitted free.

WORKING FUN — Volunteer development of ARA Area continues with building of scale railroad encircling present area of major effort. Some groups are combining work parties with departmental picnics, like quality assurance (Dept. 141) shown above. At left, group is busy landscaping around main track and spur. In center, both adults and kids line up for egg toss contest, one of many events staged during afternoon. At right is small part of 50-member work party. Others were assembling track sections. Departments interested in picnics or picnic-work party arrangement are invited to contact ARA office, ext. 1111. When completed, scale railroad will offer rides around entire recreation area. Construction of a "diesel" engine has been under way for several months.

Sports & Recreation

'Head Count' Pending as ARA Readies Winter Bowling Plans

ARA's largest sports activity, bowling, is ready to "count heads" this week in anticipation of opening the 1964-65 winter season in all leagues during the week of Sept. 14. Starting time is 6:15 p.m.

Application blanks for ARA-sponsored leagues are now available through employee services. More popular leagues will be filled on a first-come, first-served basis.

Prior to the opening of all leagues an all-bowlers meeting will be held at 7:30 p.m. Aug. 24 at ARA Clubhouse. While all bowlers are invited, each team must be represented by at least one individual. Rules, procedures and operating schedules will be presented and discussed.

Set to operate again this winter are a number of previously popular leagues, as well as new leagues being formed by popular demand. Other leagues will be considered only if interest warrants.

Clairemont Bowl will feature an 850 men's scratch and a 750-775 mixed handicap league on Tuesday; an 825 men's scratch league on Friday along with two mixed handicap leagues (700 to 800); and a Saturday afternoon (4 p.m.) father-son loop.

Parkway Bowl will house a 750-775 mixed handicap loop on Tuesday.

El Cajon Bowl offers a mixed league rolling Thursday.

La Mesa Bowl will again house mixed leagues on Tuesday and Wednesday evenings.

A 750 mixed handicap loop on Wednesday and a second mixed handicap loop on Friday will roll at Frontier Lanes.

Twins Capture Talent Contest

Judy and Joyce Cross, identical twin daughters of GD/Astro's Tom Cross (Dept. 403-3), recently placed first in their group during the "Youth for Christ International Talent Contest."

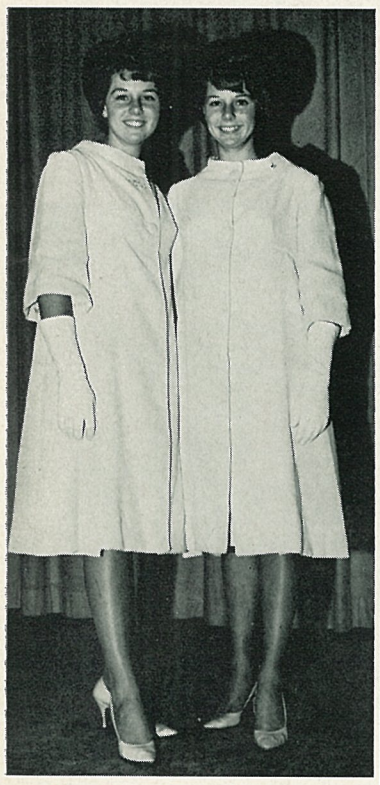
Held in July at Winona Lake, Ind., the event drew contestants from throughout the United States, Canada, England, Japan and Germany.

Judy and Joyce, 17, performed as a singing duo.

Previously, they had won local contests, then state honors.

Although the singing sisters have had no formal musical training, they have been active for the past six years in church and school choral groups. They enter the senior class at Granite Hills high school this fall.

Following graduation they hope to utilize college scholarships they won in international events.



PRETTY PAIR — Judy, right, and Joyce Cross, daughters of Astro's Tom Cross, smile after winning top honors in international talent contest.

Mexican Picnic Set By ARA Explorers

ARA Explorers plan a Mexican barbecue picnic in the Recreation Area Aug. 29 for members and their families.

Members may obtain tickets (50 cents per family) from Dick Bowen, ext. 4386, or Sandy Blum, club treasurer, ext. 2951.

The club meets the third Wednesday of each month at ARA Clubhouse, and schedules monthly field trips to remote mountain and desert areas.

'Impulses' Slated At Teen-age Dance

Next ARA Teen Club dance will be held Saturday (Aug. 15), 8 to 11:30 p.m., in ARA Clubhouse, with music provided by "The Impulses."

A "home-grown," junior version of the Beatles will provide intermission entertainment.

Commissioner John Hess said good school clothes would be appropriate dress. Admission is 50 cents per person, and each member may bring one guest.

Railroad Grows As Work, Play Draws Families

Two types of parties — work and play—normally draw Astro folk to the ARA Area adjacent to the main plant on weekends.

On occasion groups combine the two, much to the delight of those concerned.

Typical was a July 25 gathering of quality assurance (Dept. 141) personnel and their families. About 50 adults came early to work on the major volunteer project in works—the building of a scale model railroad layout which is encircling the area and will offer rides when completed.

Throughout the morning Dept. 141 volunteers helped assemble track sections and performed landscaping along the railroad right of way.

By noon the party had grown to some 250 people who enjoyed games, contests and a full-scale picnic lunch.

Heading the group planning and conducting the effort were R. E. Dubel, chairman, W. G. Lux, V. M. Sardo and Don Menard.

Groups wishing to stage picnics or combination picnics and work parties are invited to contact ARA office, ext. 1111, for details.

Astro Son, 14, Top Midget Ball Hurler

LINCOLN AFB—The 14-year-old son of an Astronautics employee here has chalked up an outstanding record in competing in American Legion midget baseball.

He is Dave Hodge, son of David Hodge Sr., a senior production planner.

Young Hodge has won six games and lost only one while pitching for the Judd's team. His brightest moment came when he hurled a 3-0, no-hit, no-run game against Roberts to vault his team into the area tournament play-off round.

Ranscht, Knutson Repeat Standings

Warren Ranscht and J. S. Knutson placed one-two in both master class of a .22 Police Course and a Short National, during recent matches of ARA Pistol Club.

In the Police event, Ranscht scored 296 and Knutson 294; John Bennett dominated Angrim Carlson, 289-286 in expert class; Lee Messerli topped J. D. Powell, 283-273 in sharpshooter bracket, and Lyle Ewing turned in a marksman score of 241.

In the National, Ranscht had 289, Knutson 287, Messerli 278, and Harold Sicard 277.

GUN ENTHUSIASTS SLATE TWO SHOOTS

Two open shoots are scheduled this month at Gun Club facilities at Gillespie Field. These are a Troy shoot Aug. 23, and the group's annual merchandise shoot, Aug. 30.

PHILATELISTS — Individual winners among ARA Stamp Club entrants at County Fair display prize-winning exhibits. From left, Don Thompson, Alfred Lawson and Herbert Heyn show "Americanas" display (Stamp Club), Confederate covers (Thompson), and 200th Atlas flight (Heyn).

ARA Stamp Club Displays Earn San Diego County Fair Awards

ARA Stamp Club gathered a shower of awards for exhibits this year at the San Diego County Fair, with members collecting three "firsts" and a "second," while the club won a "third" for a collective display.

A. W. Lawson, club president, received two of the top awards. One was for his display of first-year Israeli stamps and covers; the other for an exhibit of interim and local issues of Israel.

Don Thompson also earned a blue ribbon for his display of Confederate stamps and covers.

A unique 200th Atlas flight cover, with autographs of President Johnson, Secretary McNamara, and leading General Dynamics executives including President Roger Lewis, GD/Astro President J. R. Dempsey, Mortimer Rosenbaum, Karel Bossart and B. G. MacNabb, won a red ribbon for Herb Heyn.

The club display, which received a white ribbon, featured "Americanas"—foreign issues with U. S. items (the flag, presidents, statesmen, etc.) in the design.

Stamp Club meets regularly at 7:30 p.m., the second and fourth Thursday of each month in ARA Clubhouse. At the up-coming session (Aug. 13), a slide show of Canadian issues will be featured.

Bridge Fans Seeking More at Friday Play

ARA Bridge Club is campaigning for more players at its regular Friday night (7:30) sessions in ARA Clubhouse, as vacations take their toll and "space a plenty" becomes available.

All Astro bridge fans are welcome to participate in activities of the group which bills itself "friendliest in the land."

Play July 24 ended in a tie for first and second, north-south, with Margaret Grindstaff, Mitzi Rustad, Pauline and Bill Hatherley sharing honors. East-West winners were Wayne and Billie Evans.

In an individual championship July 31, top-ranked quartet was Bob Rustad, Margaret Grindstaff, Joy Johnson and Gus Delaney.

ROCKETS BLAST VAFB WITH 12-0 BARRAGE

Astro's Rockets, behind the one-hit pitching of George Cunningham and an 11-hit barrage scattered over five innings, swamped an Astro Vandenberg AFB team 11-0 in a recent exhibition.

Played at ARA Field, the game found the Rockets pasting the first defeat in 12 games on the visitors. Norman Dahl paced hitters with three timely blows that drove in five runs.

The Rockets tangle with Gardena, defending International Softball Congress World's champions, 8 p.m., Aug. 22 at ARA Field. This exhibition contest will be preceded by a 6:30 p.m. contest between Ralph Hawks and Gardena.

There will be no admission charge for these games.

'Know Your Money' On Coineers Docket

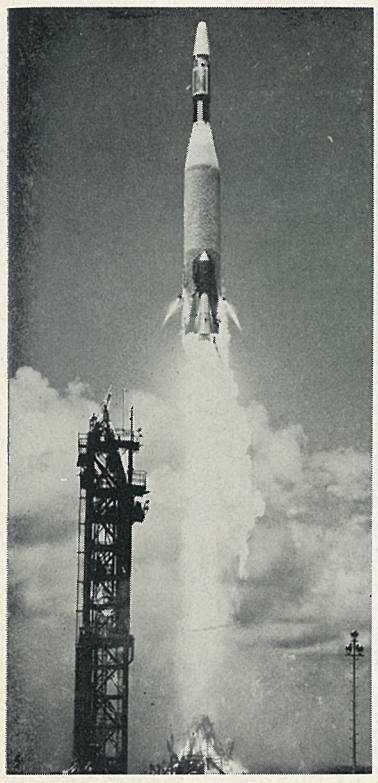
A film, "Know Your Money," will be featured at the meeting of ARA Coineers, 7:30 p.m., Aug. 19 in ARA Clubhouse. Display theme is "silver" and a free coin (1964P dime) will go to each attending.

The club is also planning for its annual family picnic to be held in the ARA Area next month.

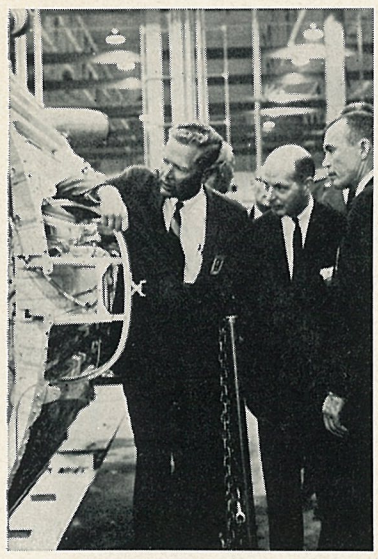
First of Test Units Shipped by GD/E

GD/Electronics has reported shipment of the first unit under a $2.2 million contract from the ordnance department, General Electric Co., for the "MK-412 Module Test Set," intended for installation aboard some of the U. S. Navy's Polaris missile submarines.

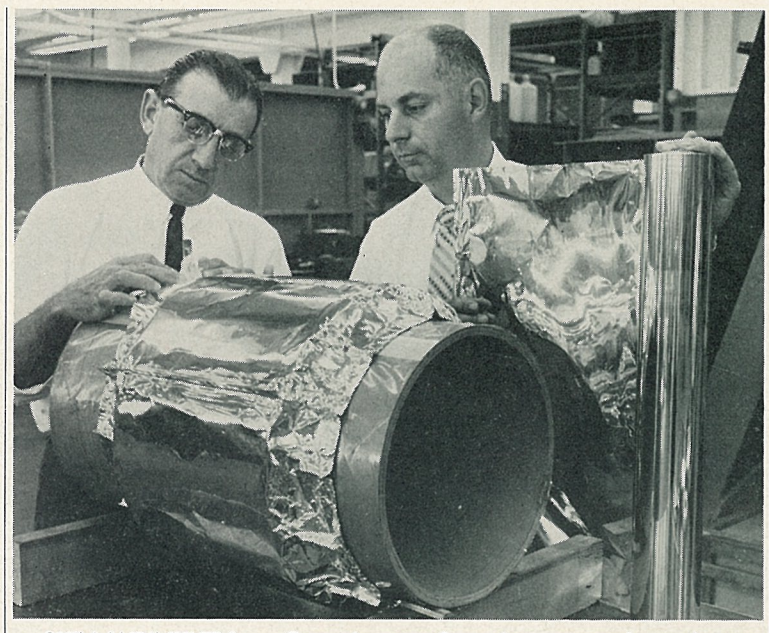
The module test sets are completely transistorized for compactness, reliability and low power requirements. Their function is to locate faults in various electronic modules that make up the fire control system and other sub-systems on Polaris submarines, if any are found to be performing imperfectly, and to assist in diagnosing trouble so the faulty modules can be replaced while the ship remains on station.



MOON HO! — Atlas-Agena booster speeds Ranger straight on target in recent moon shot.



INSIDE LOOK — Leonard Marks Jr., Assistant Secretary of the Air Force, center, peers closely into "plumbing" of Atlas SLV-3 at GD/Astro, while President J. R. Dempsey, left, and C. S. Ames, vice president and program director—SLV, explain key points.



SKIN WRINKLERS — Convair manufacturing research engineers, Gene Green and John Murphy, prepare test setup simulating cryogenic fuel tank to learn where wrinkles will occur in foil insulation cover.

GD/Convair Engineers Probe Mysteries of Wrinkle Patterns

Where does skin go when it wrinkles, is the question GD/Convair manufacturing research and development engineers are attempting to answer.

In a company-initiated study into a little-known field, they are wrinkling aluminum foil over and over on purpose to see if it is possible to predict and control wrinkle patterns.

Results of the explorative studies, if they are successful, could become extremely important in development of more effective insulation systems for liquid hydrogen fuel tanks propelling outer space vehicles, explained J. F. Murphy and E. D. Green, manufacturing research senior engineers.

Problems have cropped up in storage of liquid hydrogen, when the insulation vacuum system is evacuated and the excess material of the outer cover folds and wrinkles like skin on a dry prune. These wrinkles form pockets, or thermal windows, which cut down the reflectivity and reduce effectiveness of insulation.

The vacuum system is used to hold the insulation in place and keep loss of fuel by evaporation to the minimum both in flight and on the ground before launch.

"Insulation vacuum covers, made of thin aluminum foil, must be as smooth as possible at all times to keep the fuel tanks fully insulated," said Convair's research engineers working on the study.

If they can come up with a means of predictable wrinkling through patterns set in advance, or find a way of compensating for evacuation of air to keep the outer cover smooth as the insulation system becomes evacuated, they feel they will have made a giant step forward in the little-explored area.

Electronics Awarded AF and NASA Business

GD/Electronics at Rochester has announced receipt of a $796,000 contract from the Air Force for a program known as "Range Instrumentation Control System" and a $86,665 order from NASA for a study of "Laser Modulation at the Atomic Level."

The AF program, under the cognizance of Patrick AFB, provides for digital data transmission and processing between Cape Kennedy and four of the downrange stations of the AF Eastern Test Range. When completed in 1965, the system will provide the main control station at Cape Kennedy with automated control over the downrange instrumentation complex.

The NASA program relates to methods of internally influencing the radiating centers of active Laser materials in order to effect efficient Laser modulation. The study could eventually be applied to deep space communication systems.

Volunteers Pitch in to Paint B-36 Memorial at Airport

About 100 FW hourly and salaried volunteers participated recently in refurbishing the giant B-36 Memorial at Greater Southwest International Airport near Fort Worth.

A steam-cleaning job was carried out by second-shifters under direction of L. M. Mayfield, while Cliff Hubert supervised structural rework done by volunteers from Depts. 41, 72 and 73.

Dept. 74 supervisors J. H. Rhoades, H. A. Patterson, R. G. Bryden, and C. L. Bigham headed painters, who completed their assignment on a Saturday between 5 a.m. and 1 p.m.

Sam Keith, chief of traffic, is chairman of Management Club's B-36 Memorial Committee. W. F. Sutton, assistant factory manager, headed this year's effort, assisted by Lyle King, general foreman.

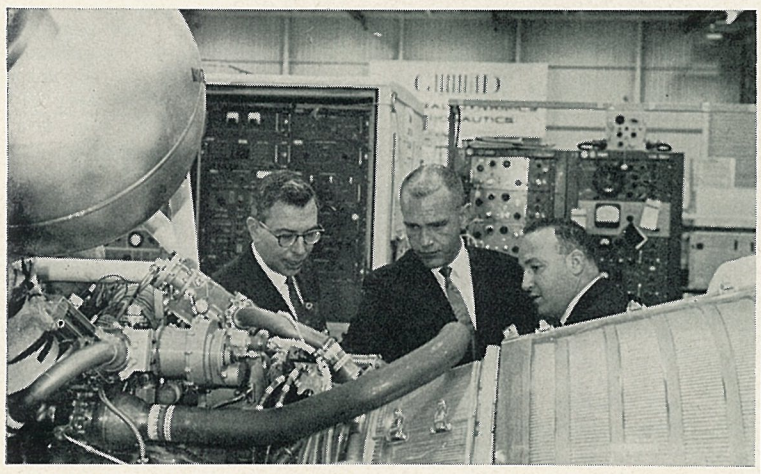
Sandblasting of the big bomber was sponsored by Amon Carter Foundation.

The B-36 was put on display at the airport in 1959, following a flight from Biggs AFB in El Paso.

Since that time, thousands of visitors have been led on conducted tours through the Peacemaker by Management Club volunteers.

From now on, though, visitors will see the B-36 from the outside only. Bomb bay and other doors were closed and locked. The measure was taken to help preserve the aging airplane.

King lauded support given by labor relations, wage and salary, manufacturing control and Depts. 40 and 74.



CLOSE LOOK — R. Duff Ginter, center, new Centaur program manager for NASA, studies Centaur parts closely during recent visit to Astro. Ginter said Centaur had long and bright future in interview following his appointment. With Ginter above are Ronald Rovenger, right, NASA resident manager at Astro, and Andrew Kalitinsky, assistant program director — engineering for Centaur.

Down on the Farm

Old Tractor Is Newest Relic In Growing Antique Collection

A turn-of-the-century steam tractor—complete with coal-burning boiler and smokestack—is the latest addition to H. S. Smith's collection of farm "relics."

The GD/Fort Worth assistant foreman, Dept. 25-3, has the tractor on display at his 80-acre farm near Cresson, 20 miles southwest of Fort Worth.

"I looked for an old tractor like this for years," said Smith, "then last year I found one not over 46 miles from here and bought it."

The 16-50 horsepower machine (16 hp pulling power and 50 hp on belt drive) was used in threshing oats, wheat and other grains. The model yielded to combines and gas-driven tractors in the early 1930s.

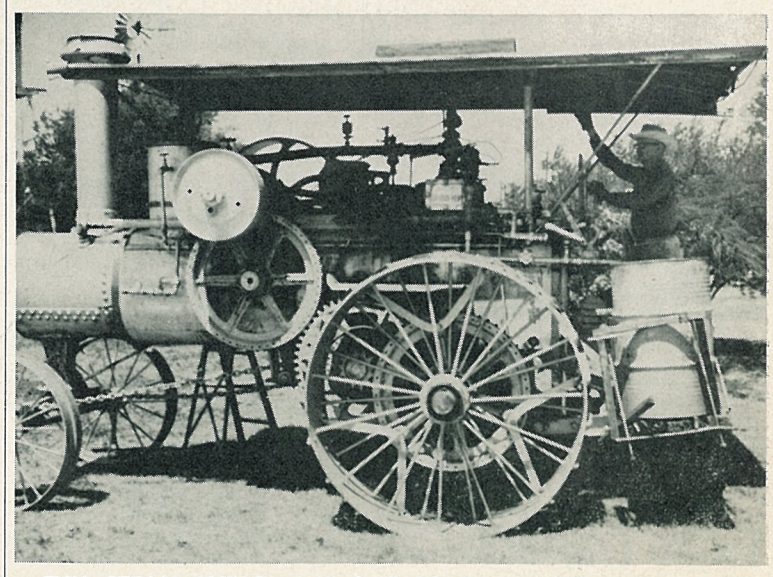
Resembling an early-model steam engine, the tractor worked on the same principle: wood and coal were burned in the fire box, feeding the boiler in front.

Smith, a GD/FW employee for about 21 years, refurbishes old equipment in his workshop. He is set up to do either acetylene or electric welding and most types of machine work.

Right now, for example, he's restoring the aluminum-painted tractor to its original colors — black boiler and red wheels.

Included in Smith's growing collection are an old grist mill, separator, and blacksmith shop equipment.

"It's a lot of fun," Smith says of his hobby, "and it gives me something to look forward to in retirement." He's always on the lookout for additions to his collection—an eye-opener, not only to the modern city dweller but to the old-timer who likes to reflect on how things used to be down on the farm.



FULL STEAM AHEAD — H. S. Smith, Dept. 25-3, fires up early-model steam tractor, latest addition to his collection of old farm equipment.

First C-141 Empennage Part Goes to Automatic Riveter

First C-141 empennage part, a horizontal lower surface panel, went onto one of three newly-converted automatic Erco riveting machines in GD/Convair's C-141 production area late last month as a major step in expediting C-141 production.

Convair's Erco drivematic riveters, which were used on 880/990 transport subassemblies, have been rebuilt to meet Lockheed-Georgia Co. and Air Force requirements for the C-141—mainly, to include application of wet prime in rivet holes as a corrosion preventive.

Also, the machines had to be changed to accommodate countersunk rivets instead of the 82-degree fuel-sealing rivets used on 880s and 990s.

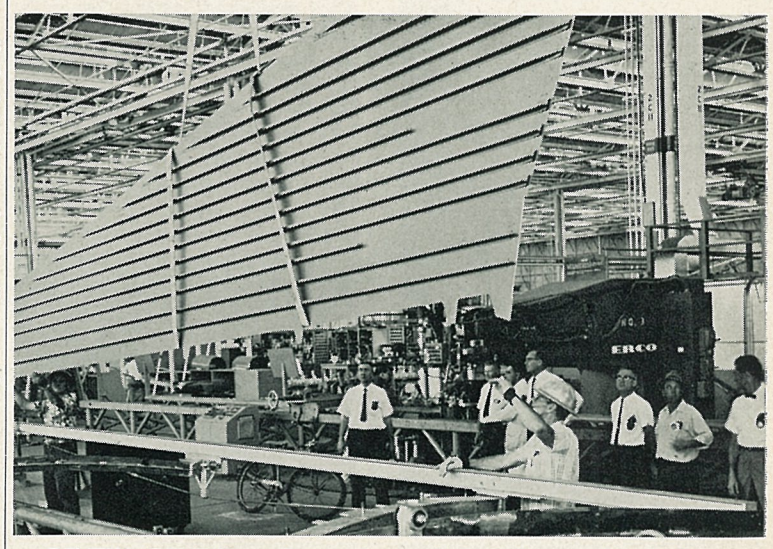
Manufacturing and development department directed the modification. Electrical engineers in Dept. 25-4 designed the electrical system change-over with Dept. 401-7 (tool services) doing the modification and checkout.

R. D. Bush of research and development designed the automatic paint applicator which squirts a tiny spray of prime into the rivet hole after it is drilled and before the rivet is fed into the hole by the upper ram.

The conversion job extended over several months due to the complex technical problems involved.

All four horizontal panels and four vertical panels of each empennage now will go to the automatic machines for riveting as C-141 production speeds up.

R. W. Miller, C-141 program manager at Convair, said that this use of automatic equipment is in line with program acceleration in all areas. Production rate will reach seven a month next year.



GENTLY, GENTLY — Crane riggers L. L. Sellers and D. R. Sperandio position first C-141 horizontal surface panel to go on Erco drivematic riveter after machine's conversion for C-141 parts. Watching are E. E. Miller, C-141 assistant foreman; R. D. Bush, process analyst; M. A. Julio (Dept. 401) who did modification and checkout; V. P. Mavrinac, tool services assistant foreman; Jack Benedict, C-141 assistant foreman; M. L. Merritt, transportation leadman; George Tahan of mfg. methods planning who made time and cost study.

'Share in America' Drive Adds 13,000 New Buyers

Nearly 13,000 regular purchasers of U. S. Savings Bonds by payroll deduction were added during the 1964 "Share in America" bond drive conducted by General Dynamics Corporation divisions.

Overall participation now is 63.3 per cent, the best mark in the Corporation's history, Algie A. Hendrix, General Dynamics vice president-industrial relations, reported.

Leading all divisions is Electro Dynamic with 87 per cent participation, followed by GD/Astronautics with 80.7 per cent and Liquid Carbonic with 78 per cent of employees.

Both Electro Dynamic and Liquid Carbonic registered spectacular increases to gain their positions of leadership.

Also ranking high were GD/Electronics personnel at San Diego with 75.6 per cent, GD/Convair with 70.3 per cent, GD/Pomona with 65 per cent, GD/Fort Worth with 63 per cent, Electric Boat with 60 per cent.

Corporate Office personnel increased to 75.8 per cent.

Not reflected in the standings was the fact that many previous buyers increased allotments during the campaign.

Hendrix commended campaign chairmen on their efforts and took particular pleasure in that the goal of 12,000 new subscribers was exceeded by 873 for a Corporation-wide total of more than 49,000 regular buyers.

"The Corporation endorses wholeheartedly the goal of this program, which is to provide individuals with the means to assist their country in maintaining its leadership and strength. Although the 1964 drive is officially over, we are depending on continued efforts to maintain and encourage participation throughout the year," Hendrix commented.

GENERAL DYNAMICS

GD

ASTRONAUTICS EDITION

NEWS

Vol. 17, No. 18 PUBLISHED BY GENERAL DYNAMICS CORPORATION Wednesday, August 26, 1964

GD/Astro Totals Savings in 1964

In the first six months of 1964, cost reduction and value control efforts at General Dynamics/Astronautics produced $33,032,000 in audited, achieved savings on firm and likely potential business, President J. R. Dempsey announced recently.

Of this total, cost reduction efforts accounted for $14,046,000, value control for $5,666,000, while the balance of $13,320,000 represented a single cost avoidance saving to the Air Force. This value represents completion of projects which will ultimately avoid or save costs in the amounts stated.

Reports covering in detail the division's CR/VC activities during the second quarter (April-June) were issued earlier this month by the office of E. D. Heller, GD/Astro manager of cost reduction and value control (Dept. 192).

These disclosed that in the current reporting period alone, division savings from both CR and VC had nearly doubled targeted goals.

Since the first of the year, some departments' self-imposed savings goals have been exceeded by over 100 per cent. As a result, these departments have set themselves new and still higher marks, and at least one has already achieved savings in excess of its second target!

In the second quarter, CR savings amounted to $11,565,000—$8,933,000 from Cost Reduction Projects, $237,000 from ES/CIP programs, $1,236,000 from reports and records management, and $1,158,000 from method improvements.

Value control savings in the same period reached $2,778,000.

Heller has emphasized that savings reported are "real" savings—the net amount after deduction of installation costs, etc. (To date, the cost reduction program has shown a 120 to 1 ratio of savings to administrative costs, with a 56 to 1 ratio value control.) It is noted that budget underruns are not reported as cost reduction achievements.

Worthy of note in GD/Astro's value control effort is progress in the field of education. Since January, 233 employees have completed 40-hour value engineering seminars, and an additional 300 have attended in-plant VE orientation sessions.

$73,980 Cost Project Heads List Of Big Ones Developed at SLV

Certificates recognizing implementation of cost reduction and value control projects with savings totalling $611,331 were distributed this month to members of the Space Launch Vehicles (SLV) project at GD/Astronautics.

Nine of the awards cited projects showing individual savings of over $25,000, and certificates acknowledging these were presented personally to their 19 originators by C. S. Ames, vice president and program director—SLV.

Largest single project was submitted jointly by Jim Starkey and D. B. Suggs who shared credit for savings of $73,980. They implemented a project to process changes as Class II instead of Class I during conversion at ETR Complex 14.

L. L. Tuttle proposed combination of SLV and institutional production engineering groups for $62,240 savings, and elimination of kit test specifications through efforts of J. R. Pethigal saved $62,756.

Combination of factory and field procedures groups, propos-

(Continued on Page 2)

BIG SAVERS — Certificates for completed cost reduction and value control projects presented them by Vice President C. S. Ames, left, are displayed by M. S. Fader, L. L. Tuttle, J. R. Pethigal, L. O. Anding and J. M. Macdonald. All implemented projects with $25,000-plus savings, as did F. J. Schulz, R. P. Krause, Jim Starkey, D. B. Suggs and W. Lewicki, not shown.

Centaur Flies To Cape For Atlas Mating

The airlift (on Aug. 14) of an experimental Centaur launch vehicle from GD/Astronautics to Cape Kennedy has set the stage for another major step in lunar exploration.

At Cape Kennedy the Centaur will be mated to an Atlas vehicle to become the AC-4 (Atlas-Centaur 4) combination.

Later this year it will be launched, carrying aloft for the first time a 2,000-pound engineering model that simulates the weight and dynamic characteristics of the Surveyor spacecraft. Beginning in 1965, Atlas-Centaur vehicles will launch Surveyor spacecraft to explore the lunar surface prior to manned lunar flights at later dates.

The engineering model to be carried aloft by AC-4 will be instrumented to obtain environ-

(Continued on Page 2)

SENIOR EUROPEAN REP FOR GD NAMED

Roger Lewis, president of General Dynamics Corporation, has announced appointment of Gen. Joe W. Kelly, USAF (Ret.) as senior European representative for the Corporation. His headquarters will be in Paris.

General Kelly

General Kelly retired from the United States Air Forces last July after 32 years of continuous service with the Air Force and the Army Air Corps.

Immediately prior to joining General Dynamics, General Kelly had been commander of the USAF Military Air Transport Service since 1960.

He graduated from the United States Military Academy at West Point in 1932. After completing flying school, he was assigned to the 94th Pursuit Squadron, and during the 30s he was one of the select group of air mail pilots for the Army Air Corps.

His major posts have included, successively: member of the Military Mission to Chile; commander of the 386th Bomb Group (Medium) of the Ninth Air Force in Europe during World War II; director of aviation at West Point; chief of Plans and Operations division of the Air War College; commander of the Far East Air Forces Bomber Command (Strategic Air Force); director of Legislative Liaison with the office of the Secretary of the Air Force; commander of the Air Proving Ground Center (Eglin AFB, Florida). He has been a full general since June 1963.

Sales, Earnings Improve in '64

Sales and earnings of General Dynamics Corporation for the three months and the six months ended June 30, 1964, continued to show improvement over comparable periods of the year before, Roger Lewis, president, announced this month.

New orders received during the first six months of this year were substantially larger than those in the first half of 1963. The improvement in sales, earnings, and orders is reflected in all major areas of the Corporation's activities, including aircraft, missiles, space systems, electronics, nuclear and marine activities, building materials, minerals and compressed gases.

For the six months ended June 30, 1964, sales were $759,546,000 compared with $706,179,000 in the first half of the prior year.

Consolidated net income of General Dynamics Corporation and subsidiaries came to $18,610,000, or $1.62 per common share, after provision for dividends on the preference stock equivalent to 24 cents per share of common stock.

During the first half of 1963, no provision for income tax was required on the Corporation's earnings due to the carry forward of the 1961 loss. This year the Corporation is paying income tax on all its earnings. For purposes of comparison, 1963 earnings for the six-month and three-month periods have been restated to include full provision for taxes.

In the first six months of 1963, net income was $14,535,000 or $1.45 per common share, when no provision for preference dividends was required.

For the three months ended June 30, 1964, sales were $381,815,000, compared with $356,517,000 in the comparable quarter of 1963.

Consolidated net income was $11,320,000, or $1.01 per common share after provision for preference dividends equivalent to 12 cents per common share.

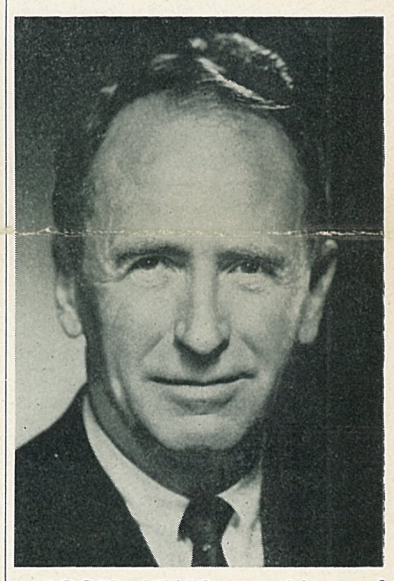
In the second quarter of 1963, net income was $9,631,000, or 96 cents per common share, with no provision for preference dividends required.

At June 30, 1964, working capital was $211,000,000, an increase of 33% over a year earlier.

Lewis also announced that the Corporation has elected to exercise a pre-payment option in its long-term debt agreements. The company's ability to take this action, he said, reflects the strong improvement in its cash position and will result in a further reduction in interest charges.

During August, an advance payment of $25,000,000 will be made. That will reduce total long-term debt to approximately $99,000,000 — the lowest it has been since 1958. This marks the second time in less than a year that a substantial reduction in the company's long-term debt will have been accomplished.

In improving operating results, Lewis said the company has also been able to effect substantial savings for its main customer, the United States Government.



ROGER LEWIS, president of General Dynamics Corporation, reports that new orders are above similar period in 1963.

When President Johnson and Secretary of Defense McNamara asked all defense contractors to help reduce defense costs, Lewis noted, General Dynamics had been able to reply that during 1963 it had effected savings, already reflected in lower costs to our customers, of approximately $60,000,000. In the first half of this year alone, he added, this continued program has resulted in savings or cost avoidance of equal magnitude.

In addition, the Air Force has recently announced that the 100% reliability achieved by Atlas boosters in 14 consecutive space launches (for both the Air Force and the National Aeronautics and Space Administration) during the Government's 1964 fiscal year (ended June 30) had resulted in a total cost avoidance to the Government of approximately $81,000,000.

Labor Day Holiday Slated For Sept. 7

Labor Day holiday will be observed by General Dynamics people on Monday, Sept. 7.

Only necessary security and maintenance people will be on duty.

Everyone will report to work at regular hours the following day, Tuesday.

Log Book Entries

Service Emblems

ASTRONAUTICS

Service emblems due during the period August 16 through August 31.

Thirty-year: Dept. 834-1, V. F. Cernuto.

Twenty-five-year: Dept. 403-3, C. E. Damschroeder Jr.

Twenty-year: Dept. 103-0, Gloria R. Copeland; Dept. 130-6, Jeanette W. Kupersavage; Dept. 403-1, Robert Jennings; Dept. 715-0, B. H. Johnson; Dept. 957-0, R. R. Reinagel.

Fifteen-year: Dept. 250-1, L. J. Renz; Dept. 404-1, Antonio Gianformaggio.

Ten-year: Dept. 010-3, H. M. Ikerd; Dept. 032-4, J. H. Getz; Dept. 142-1, C. E. Wiggains; Dept. 143-4, K. C. Scott; Dept. 146-0, H. O. Story; Dept. 210-0, C. A. Hill Jr.; Dept. 318-0, R. F. Lundberg; Dept. 363-1, J. W. Hanning; Dept. 405-2, J. G. Morones; Dept. 454-0, William Honecker.

Dept. 565-3, W. C. Hester; Dept. 596-0, J. E. Koency; Dept. 718-0, D. M. Hernandez; Dept. 744-0, W. J. Tarter; Dept. 756-0, W. H. Houchin; Dept. 759-0, J. K. Kramer, R. R. Walker; Dept. 780-3, Katherine A. Ford; Dept. 831-1, C. P. Freeman; Dept. 834-1, John Murray; Dept. 835-3, R. C. Pritchett; Dept. 953-2, L. J. Gaber; Dept. 962-4, A. W. Spencer; Dept. 989-2, H. B. Meyer.

LINCOLN AFB

Fifteen-year: Dept. 389-4, J. H. Cheek.

PLATTSBURGH AFB

Fifteen-year: Dept. 394-4, J. D. Martin.

VANDENBERG AFB

Ten-year: Dept. 576-2, Marilyn Perez.

Papers Presented

ASTRONAUTICS

BARTHEL—James R., Dept. 596-0. "Calculation of Plasma Transport Properties by Autocorrelation Method," submitted to Physics of Fluids.

BREEZE—J. C., with C. C. FERRISO, both Dept. 596-0. "Integrated Intensity Measurements . . .," submitted to Journal of Chemical Physics.

CAMPBELL—M. D., Dept. 592-1. "Thermal Expansion Characteristics of Some Plastic Materials and Composites . . .," Cyrogenic Engineering Conference, Philadelphia, Aug. 17.

CHRISTIAN—J. L., with W. E. WITZELL and Abe HURLICH, all Dept. 504. "Evaluation of Effects . . . on Crack Propagation Properties," Cryogenic Engineering Conference, Philadelphia, Aug. 17-21.

FERRISO—C. C., with C. B. LUDWIG, both Dept. 596-0. "A Band Ratio Technique for Determining Temperatures and Concentrations of Hot Combustion Gases from Infrared Emission Spectra," 10th International Symposium on Combustion, Cambridge University, England, Aug. 17.

FONTENOT—L. L., with D. O. LOMEN, both Dept. 512-4. "Dynamic Behavior of Partially Fluid-Filled Containers . . .," submitted to Journal of Acoustical Society of America.

GILBEAU—J. J., with D. MARTINDALE and K. R. BURTON, all Dept. 986-3. "Large Scale Storage and Transfer System for . . . Liquid Helium . . .," Cryogenic Engineering Conference, Philadelphia, Aug. 17-21.

HASKINS—James F., Dept. 547-6. "Thermal Conductivity of Reinforced Plastics at Cryogenic Temperatures," Cryogenic Engineering Conference, Philadelphia, Aug. 17.

HILL—D. M., Dept. 036-1. "Effect of Shock Waves on Radio Tracking System Accuracy," 9th Symposium on Ballistic Missiles and Space Technology, San Diego, Aug. 12-14.

JARLETT—Frank E., Dept. 581-2. "A Hypersonic Airplane . . .," 9th Symposium of Ballistic Missiles and Space Technology," San Diego Aug. 12-14.

KLEE—Bernard J., Dept. 564-2. "Scheduling—A Tool for Test Laboratory Management," submitted to Journal of Environmental Sciences.

LEGAL—Dennis A., Dept. 549-3. "Switching Mode Voltage Regulator," submitted to Motorola Silican Transistor Complementary Circuit Design Contest.

LUDWIG—C. B., with C. C. FERRISO, both Dept. 596-0. "Temperature Determination of Hot Gases from Infrared Radiance Measurements," American Physical Society, Denver, June 25-27.

MANARY—Robert C., Dept. 290. "Equipment Precautions Essential for High Quality Welds in Thick Aluminum," Aluminum Welding Symposium, Marshall Space Flight Center, Huntsville, July 7-9.

MARRIOTTE—R., Dept. 596-0. "Molecular Collision Cross Sections . . .," submitted to Proceedings of the Physical Society (London), Institute of Physics and Physical Society.

Official Notices

UTILITY SHUTDOWN

Major electrical service shutdowns at Plant 71 are planned for the weekend of Sept. 5-7.

From 12:01 a.m. Sept. 5 until 12:01 p.m., Sept. 7, shutdown of 12 KV feeders Nos. 5 and 7 for substation exchange will affect Bldgs. 1, 2, 3, 26, 27, 33 and Bldg. 9 (pump house). Pump house shutdown will also limit domestic water availability during this period.

From 7 a.m. until 3:30 p.m., Sept. 5, 12 KV feeder No. 4 will be shut down to permit substation cleaning. This will affect power to Bldgs. 13, 14, 15, 17, 28, 30 and portions of Bldg. 4 (Col. A-1/A-19 through AK-1/AK-19, Dept. 101, data processing wing, Col. Z/AD-10 through Z/AD-35, life sciences, electronic research, IMSSS).

Emergency power for telephone service will be provided.

D. E. Merriam
Plant Engineering Supervisor

Retirements

CRAWFORD—L. Paul, Dept. 592-2. Seniority date, Sept. 14, 1951. Retired April 3.

ERENETA—Joe, Dept. 780-3. Seniority date, July 5, 1950. Retired July 13.

FERAGEN—Alvin, Dept. 388-3. Seniority date, Sept. 14, 1960. Retired July 1.

FOGEL—Aaron, Dept. 146-5. Seniority date, Nov. 6, 1956. Retired June 30.

JOHNSON—Noel K., Dept. 391-3. Seniority date, Nov. 10, 1939. Retired July 6.

KLOSS—Carl W., Dept. 833-1. Seniority date, May 29, 1951. Retired June 30.

MORGAN—P. J. Jr., Dept. 832-3. Seniority date, Aug. 10, 1950 Retired March 30.

VESPER—Cecil L., Dept. 130-1. Seniority date, Oct. 15, 1956. Retired July 1.

Voting Registrars Will Be Available During Lunch Hour

GD/Astronautics employees not now eligible to vote in the Nov. 3 general election will have a chance to register in-plant during their regular lunch periods.

Official registrars will be available at various Astro locations for those who have not previously registered, those who did not vote in the last general election (two years ago), or who have had a change of address since their previous registration.

There is no charge for this service.

Registrars will be available between 11 a.m. and 1 p.m. at the following locations on dates specified; Plant 71 cafeteria, Sept. 2, 3, 4, 8, 9, 10; Plant 19 cafeteria, Aug. 31; Pt. Loma, Sept. 1; Sycamore Canyon, Sept. 1; materials building (92), Sept. 3; Bldg. 33, Sept. 4; Bldg. 5, Sept. 4 and 9; and Bldgs. 4 and 26, Sept. 10.

Second shift employees will be able to register between 8 and 9 p.m. at the following locations on the dates specified: Plant 71 cafeteria, Sept. 8, 9, 10; Plant 19 cafeteria, Aug. 31; Sycamore Canyon, Sept. 1; materials building (92), Sept. 3; Bldg. 33, Sept. 2; and Bldg. 5, Sept. 4.

Organ Enthusiasts Have Heavy Schedule

September will be a BIG month for members of the ARA Organ Club, complete with special programs and sessions and the introduction of a new series of fall classes.

Sept. 1 at ARA Clubhouse the club will gather at 7:30 p.m. for a regular lesson session. On Sept. 15 the group journeys to Ozzie's Music, Inc., 6875 El Cajon Blvd., to hear Don Baker, noted theater organist, in a special concert for members only. There is no charge for this 7:30 p.m. affair.

Beginning organ lessons will be offered from 7 to 8:30 p.m. starting Sept. 17, also at Ozzie's. Discount price to ARA members is $8. No previous experience or the ability to read music is required.

Intermediate organ classes for members get under way at the same location and time on Sept. 14. Again, the six weeks of instruction cost only $8 for ARA members.

'Meet the Customer' Nights Scheduled

GD/Astro Management Club opens its fall activity season with two meetings of special significance to members. Both a Sept. 23 session and the October gathering are billed as "Meet the Customer" nights.

The September meeting, sponsored by Atlas Weapons System under Vice President W. L. Van Horn, will spotlight National Aeronautics and Space Administration with guest speaker Dr. Homer T. Newell of Washington headquarters.

In October, Fred Payne of Department of Defense—Research and Engineering, will speak at a meeting sponsored by reliability control under Director P. I. Harr.

60 Taking Part In Engineering Training Class

First regular training course for GD/Astronautics engineering supervision passed its mid-point this week, with some 60 employees representing all levels of engineering management taking part.

The program was designed by the Engineering Management Training Council, headed by Dr. H. F. Dunholter, as a means of increasing participants' familiarity with the overall picture of GD/Astro business operations. Course format was "proofed" in a trial class conducted earlier in the year.

The current course opened Aug. 4 with a keynote address by R. C. Sebold, vice president—research, development and engineering, and will continue to meet on a Tuesday and Thursday, two-hour-per-session basis through Sept. 8.

During the sessions, speakers from senior management in GD/Astro departments working closely with engineering, outline their respective operations.

The course will be repeated until all engineering supervisors have had an opportunity to attend.

The program is coordinated by the educational services section of industrial relations (Dept. 130-3) under J. A. Croft, chief. Vince Martin has handled course arrangements.

Tuesday is Deadline On Insurance Signing

Next Tuesday, Sept. 1, is the final date for salaried GD/Astronautics employees to sign up for the new cash value life insurance plan without a physical examination.

Cash value life insurance is an optional plan to augment Astro's salaried group life insurance plan which provides permanent paid-up protection at retirement or termination. It is available in units of $5,000 up to a maximum of $30,000 dependent upon the individual's salary.

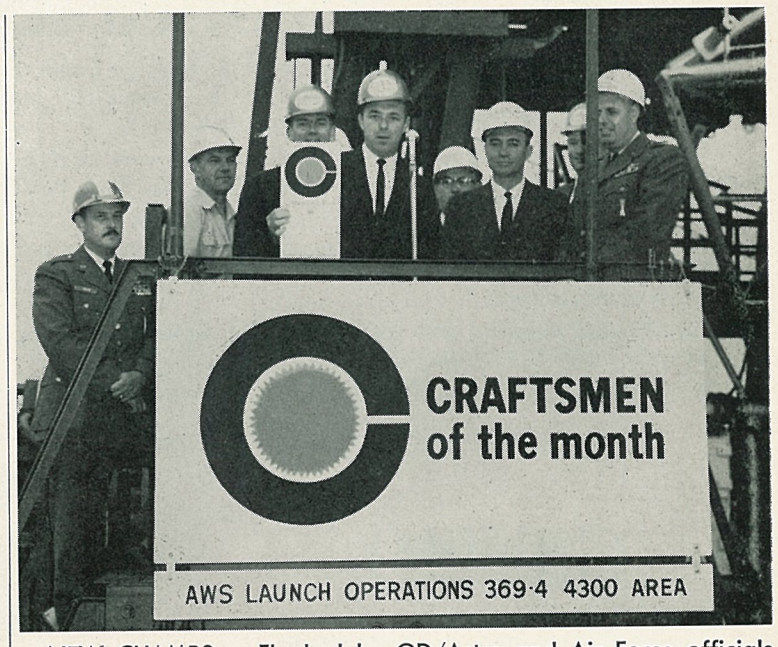
Information and sign-up forms are available through employee services section.

College Courses To Begin In-Plant

New registration procedures to be announced shortly will be followed for fall semester San Diego City College courses to be offered in-plant at GD/Astro.

Presently scheduled are eight courses opening the week of Sept. 14, and all meeting in Bldg. 17, Plant 71.

Math 17a is offered 4:30 to 7:30 p.m., Mondays, with Math 17b at the same hours, Thursdays. Both Technical Writing I and II will meet Wednesdays, 5 to 8 p.m., with Technical Writing III at those hours, Tuesdays, and Technical Writing IV on Mondays. Supervision 23 convenes Thursdays, 5 to 8 p.m.



NEW CHAMPS — Flanked by GD/Astro and Air Force officials on hand for presentation ceremony, Val Wynn displays July Craftsmanship plaque won by Dept. 369-4 employees at Vandenberg AFB. At left of Wynn is Don Fagan, GD/Astro base operations director; at right, Vice President C. S. Ames, and at rear, B. G. MacNabb, director of test operations.

Craftsmanship Awards Presented For July

General Dynamics/Astronautics Craftsmanship awards for July were presented recently to new winners in contests at both Vandenberg AFB (WTR) and in the San Diego area.

In San Diego, the spotlight focused on Plant 19, where Eric O. Johnson, general foreman, stepped into the winner's circle to accept the "Craftsmen of the Month" banner and plaque on behalf of Dept. 714 (sheet metal and processing Plant 19) employees. Making presentation for President J. R. Dempsey was E. D. Bryant, vice president-operations.

At Vandenberg, the three-time winning streak maintained by MAB-5 came to an end, as Dept. 369-4 took top honors with an unprecedented Quality Index rating of 124.0.

Val D. Wynn accepted the WTR award from C. S. Ames, vice president and program director-SLV, who, with B. G. MacNabb, director of test operations, and Don L. Fagan, GD/Astro operations director at the base, was on hand for the presentation.

Dept. 369-4 maintained a perfect record for July: no rejects on any work submitted to inspection!

Interest in the Craftsmanship phase of GD/Astro's Do Good Work program continues to spread, with five new reporting units joining the contest this month.

Now bidding for WTR honors is Vandenberg's material service department, while a whole new contest got under way at Cape Kennedy (ETR) listing Complexes 12, 13 and 14 (all SLV, Dept. 681) and Complex 36-A (Centaur, Dept. 979) as contestants.

At present, Craftsmanship participation stands at 16 units in the San Diego contest, four at ETR and five at WTR.

Dept. 714 achieved a Quality Index of 117.1 during July, with major assembly—Plant 19 (Dept. 758) in second place with 112.5. Centaur final assembly (Dept. 972), June Craftsmanship winner, ranked third with 110.5.

At Vandenberg, Dept. 682-1 (PALC-I) came within 0.6 of a Quality Index point of winning, and ended the month with 123.4. MAB-5 maintained a Quality Index of 119.6 for July, while Dept. 682-2 (PALC-II) scored 109.5.

BALLROOM DANCING FOR INTERMEDIATES STARTING SEPT. 21

Plans for a new ARA-sponsored intermediate ballroom dancing class beginning Sept. 21, and possibility of opening a new beginner's class were revealed this week by Commissioner Ludy Moeller.

The beginners class will be formed only if interest warrants.

Those interested in either class are invited to indicate their interest in an "AVO" addressed to Moeller at Mail Zone 191-00.

All ARA-sponsored classes last for a period of 12 weeks, with professional instructors teaching sessions of an hour and a half each, once a week at ARA Clubhouse.

The cost is identical—$18 per couple or $9 per individual.

Each class is tailored to teach all the latest dance steps.

Centaur Goes to Cape For Atlas Mating

(Continued from Page 1)

mental and vibration data, serving primarily to test Centaur's structural ability to boost the Surveyor weight.

On the AC-4 flight Centaur will be programmed to start its engines twice in space—a technique the vehicle will sometimes use to coast in earth orbit, then restart its engines for voyages into deeper space.

Scheduled for operational service next year, Centaur is being developed as a universal high-energy upper stage for possible use with Titan and Saturn launch vehicles, as well as the Atlas.

General Dynamics NEWS

Published by General Dynamics Corporation, One Rockefeller Plaza, New York, N. Y. 10020; with editorial headquarters at 3302 Pacific Highway, San Diego, Calif. 92112, P.O. Box 1950, telephone 296-6611, ext. 1071. Logan Jenkins, editor-in-chief.

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Affiliated editions of General Dynamics NEWS are published in Rochester, N. Y., covering GD/Electronics and Stromberg-Carlson, editorial offices, 100 Carlson Road, HUbbard 2-2200, ext. 2555. Fred E. Voss, editor; and at Groton, Conn., covering GD/Electric Boat, editorial offices at Groton, HIlltop 5-4321, ext. 300 and 513, Joseph Tracey, editor.

$73,980 Cost Project Heads List Of Big Ones Developed at SLV

(Continued from Page 1)

ed by J. M. Macdonald showed $58,870 net savings, and a proposal for test integration on Centaur follow-on boosters earned credit of $58,735 in savings for M. S. Fader.

F. J. Schulz saved $33,655 by suggesting combination of two engineering groups; R. P. Krause proposed modification of post-flight simulation procedures, which produced $33,386 savings; and W. Lewicki saved $25,620 by implementing a proposal to reduce typing on flight reports.

Others recognized were F. B. Wozniak, A. E. Holzman, E. W. Schwartz (two awards), T. S. Roberts, L. L. Dircks, P. R. Lewellen, H. Bohannon, R. S. Vernor, G. C. Lang, O. D. McGraw.

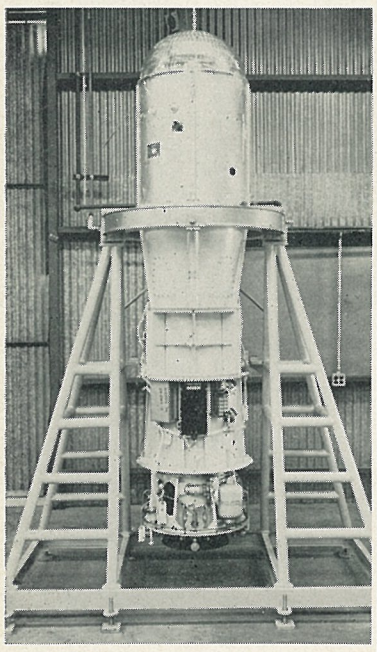
Also, E. J. Antus, W. L. McDougal, O. Hamberg (two awards), H. W. Haeseker, J. N. Germaine, E. F. Mastaglio, L. C. Bennett (two awards), E. Riemer and J. E. Humphreys.

Satar Newest Model Of Space Hitch-Hikers

GD/Astronautics' fleet of "hitch-hiking" space vehicles will be augmented by a bright new model later this year when Satar makes its first flight.

Satar (Satellite for Aerospace Research) is being developed for the Air Force Office of Aerospace Research (OAR). It is an outgrowth of Astro's successful scientific pod program.

Dating back to 1961, the scientific pod program has afforded the Air Force and the scientific community rare opportunities to carry out space research at the lowest possible cost. This was due primarily to the ability of the pods to ride into space on launch vehicles, like Atlas, sent on other missions but with additional payload capability.



SATAR — Entire unit is shown here, satellite and propulsion unit attached.

Forty-four scientific pods have flown to date. There were 19 standard (non-recoverable) pods, 23 recoverable pods and two infrared probes. Most flew on Atlas vehicles. Three vehicles each carried two pods aloft.

Those flown were non-orbital types which more or less followed the trajectory of their "parent" launch vehicle.

Now Satar, which boasts its own propulsion system to place it in orbit, represents the next important step in this economical program. Satar is capable of three basic missions—high speed re-entry, 4,700 nautical mile space probes and scientific satellites.

In its initial flight later this year Satar is slated to carry scientific experiments into orbit, riding the first portion of its journey aboard an Atlas.

Composed of a satellite and propulsion module, Satar will nestle aboard Atlas in a protective cradle during ascent, eject from the cradle and coast upward to ballistic apogee. During this phase, 12 hydrogen-peroxide powered motors will provide necessary pitch, yaw and roll maneuvers for correct orbit injection.

At ballistic apogee, Satar's solid-fuel motor will fire to place it in orbit. Once in orbit, the satellite separates from the propulsion module and proceeds on its space-probing mission.

Throughout its research and development on Satar, Astronautics has kept in mind the need for a space vehicle capable of carrying out experiments at the lowest possible cost. Coupled with this basic aim has been a design goal of a system that could incorporate many experiments without significant changes in the structure or support subsystems of Satar.

Following these objectives, Astro has selected for Satar a number of qualified and flight-proven components.

Late last month Satar was introduced to the public for the first time with news media representatives invited to Astro's main plant.

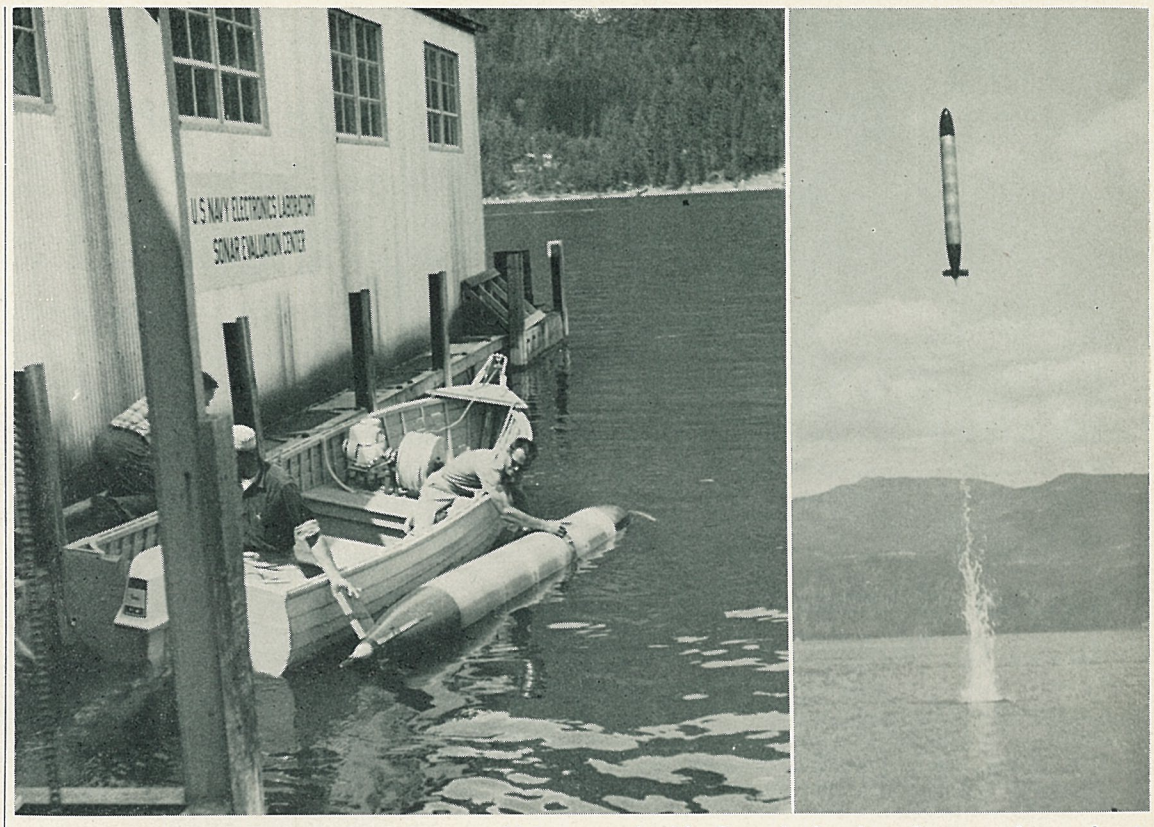
Shortly thereafter, Satar was airlifted to Cape Kennedy to prepare for its pending flight date. Air Force and Astronautics specialists are prepping it for a launch date at Complex 11.

Although qualified and flight-proven components were selected for Satar, Astro has carried out an extensive test program, first on components, then on the entire system. There were ejection tests, cradle tests, vibration tests and numerous engineering qualifications.

Climaxing the program was a final dynamic stability test effort. A prototype of the first flight vehicle was placed on a unique fixture with an air bearing base (simulating friction-free space conditions). In the program Satar was put through a full spectrum of checks, complete with firings of hydrogen-peroxide attitude control motors.

Playing key roles in this final effort were Don Harris, test conductor; Bal Agamata, Stan Maki, Bob Wingfield, Larry Smith, M. T. Raaberg, Ed Horbett, Walt Mitton and many others.

L. E. Ottem is Astro's assistant program director and P. V. Smith is engineering manager. Both report to Don Prim who heads electronic programs department, responsible for Satar development.



LAKE "SHOT" — Capsule-shaped test vehicle topped with Convair-developed sonar dome shoots high out of water (at right) from 500-ft. below surface in recent deep-water tests at Lake Pend Oreille, Idaho. At left, Navy technicians bring buoyant vehicle bearing dome alongside barge for tow to center of lake. Convair developed new-type dome over last year under NEL contract.

Astro Prints Chosen For National Honor

Professional Photographers of America, Inc. have again recognized the work of GD/Astronautics still photographers.

Astro lensmen submitted 24 prints, with 10 of them being selected to hang in the group's 73rd Exposition of Professional Photography in Chicago.

Four of the prints were the work of Keith Adams, with Jack Stevens, Frank Tercey and David Mathias each contributing two prints.

In addition, Adams was recognized by this national group as a Master Photographer, one of two in San Diego.

Still another singular honor has accrued to Jack Stevens of the Astro group. One of his portraits has been selected for inclusion in the exclusive PPA loan collection, to be exhibited throughout the U. S. and Europe.

Capsule Shot From 500 ft. Depth Proves Design of New Sonar Dome

A yellow and black capsule breaking the waters of an Idaho lake late last month proved out over a year of development work by GD/Convair dynamics engineers on a sonar dome which is acoustically "invisible."

Tests at the NEL Sonar Evaluation Center at Lake Pend Oreille climaxed months of design and test effort on a sonar dome for high-speed sonar systems, under a contract from Navy Electronics Laboratory. Testing was administered jointly by NEL, Convair, and Naval Ordnance Test Station, Pasadena, Calif.

Contract requirements called for development of a sonar dome for high-speed systems, with improved acoustic properties and low sensitivity to noise induced by hydrodynamic flow.

Evaluation of noise data recorded during the lake tests is presently under way, said Gordon Getline, Convair's project engineer on the program.

C. N. Miller was NEL project supervisor throughout the program and C. Nisewanger of NOTS directed the testing.

The dome is constructed of orange peel sections of ABS, a high-strength styrene, selected for its excellent acoustical properties in water. The interior is an open-face honeycomb type of gridwork to provide the required stiffness and also to take advantage of pressure correlation effects in the hydrodynamic boundary layer. The outer surface is smooth and streamlined. The dome sections are fusion-bonded and topped with a nose cap.

The sonar dome was installed on a buoyancy-propelled, instrumented test vehicle, provided by NOTS, for the deep water checkouts. The test vehicle was pulled by cable to a 500-foot depth and released. The vehicle's own buoyancy propelled it back to the surface.

It sped back to the surface at a maximum velocity of 36 knots, and shot about 50 feet into the air before dropping back to rest on the lake's surface. Top speed was reached about 150 feet from release depth.

Initial tests were run last November at California Institute of Technology's high-speed water tunnel in Pasadena to evaluate structural configurations as a basis for final dome design.

The current program will be concluded within two months, after final data evaluation. The present dome development stemmed from research and design of a similar-type dome for a different application under a Navy BUWEPS contract some three years ago. Getline also directed the hydroacoustic development of that body.

Further work in the field is anticipated on the basis of the successful conclusion of the NEL program.

Sacktime

GD/Astro Son Spending Month In Bed as Part of Space Study

A GD/Astronautics son is making his own contribution to the nation's space effort in a rather unusual fashion—spending a month in bed!

He is Kenneth W. Jeremiah, 22, son of Astro's K. W. Jeremiah, assistant program director—Centaur.

A psychology major (in his senior year) at the University of Southern California, Jeremiah is one of 14 volunteers taking part in his university's School of Medicine project known as Operation Sacktime. He is the lone married (for six months) student volunteer.

Operation Sacktime is studying the ability of astronauts to endure lengthy periods of weightlessness in space. Volunteers are spending 30 days in a prone position in bed, after which they will be placed aboard the school's centrifuge and whirled at eight times the force of gravity prior to extensive testing.

Before entering their beds, the volunteers went through long periods of physical conditioning, plus other centrifuge rides.

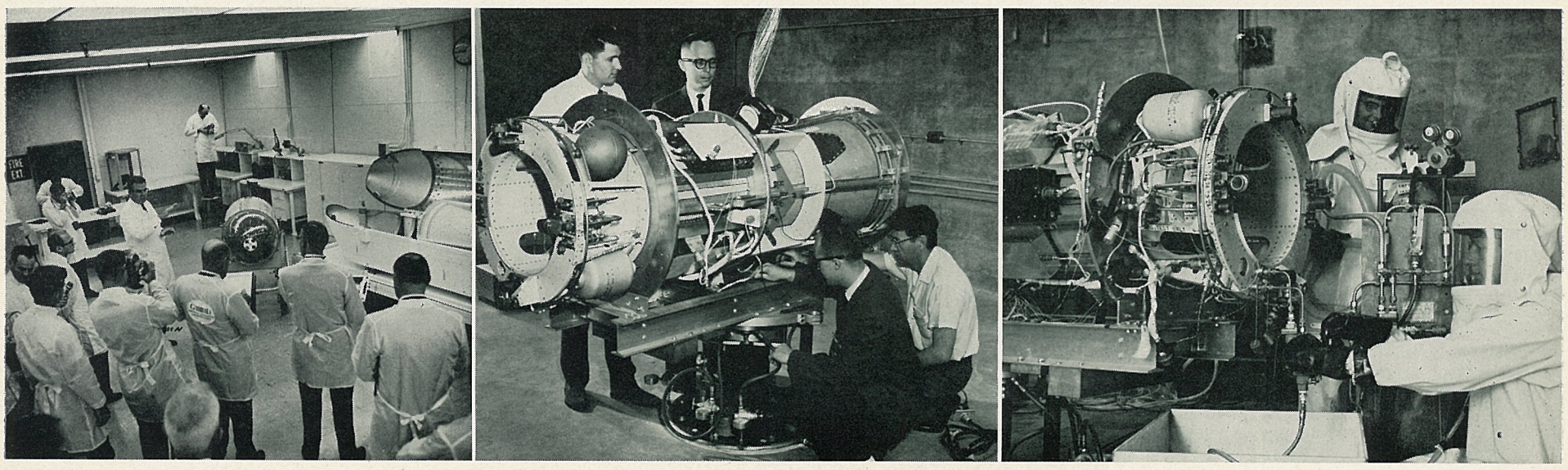
Operation Sacktime participants can now talk, read, listen to radio and watch television, but are allowed no visitors.

Annual Vultee Club Reunion Is Sept. 19

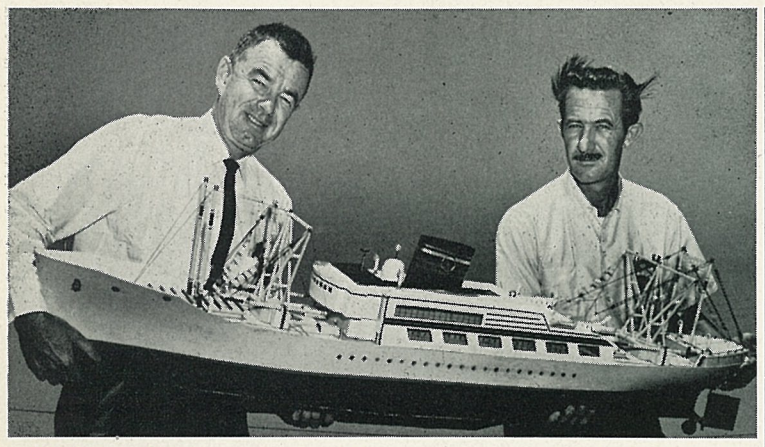
Vultee Field old-timers will gather for their 17th annual Vultee Club reunion next month, Sept. 19, at Disneyland Hotel.

More than 600 former employees of the Vultee Aircraft Co., Downey, Calif., are expected to turn out for the yearly event. Altogether, there are 800 active Vultee Club members, although any former Vultee employee is eligible to attend the meetings.

Cost of the dinner and meeting is $5. Reservations may be made be writing: Vultee Club, 11010 S. Garfield Place, South Gate, Calif.



UNVEILED — GD/Astro's Satar was shown to press recently and Don Prim, electronic programs director, explains satellite portion in photo at left. At right, Larry Smith and Bob Wingfield, wearing hydrogen-peroxide protective clothing, go through fueling operations. In center picture Ed Horbett and Jim Rice, kneeling, and Don Harris and Vic Andreone conduct test prototype. "Hitch-hiking" satellite is at Cape Kennedy being readied for launch later this year.



SHIP BUILDERS — Gordon Houvener, left, and Chuck Ogle display five-foot model "Sea Fox." Ogle built fiber glass hull, which Houvener finished, adding superstructure, steam engine and radio control. Merchantman operates on Mission Bay Park model basin.

Model of Merchant Freighter Cruises at Honest 10 Knots

The "Sea Fox" is a merchantman of modern design laid up on a modified C-3 hull, home-ported in San Diego and operated on super-heated steam, boasts a cruising rate of about 10 knots. Loaded displacement: 42 pounds.

"Sea Fox" is a five-foot model (5/32-in. to 1 ft.), produced by Gordon Houvener, GD/Astro Dept. 558-5, during several hundred leisure-time hours over the past year.

It all started when Chuck Ogle, Dept. 290, ARA commissioner and inveterate modeler, turned out the scale model fiber glass (three layers) hull.

With this as inspiration, Houvener obtained English castings and machined a two-cylinder, double-acting ¾x¾ steam engine (Stuart "Double Ten"); then designed and built an all-copper boiler with five external water tubes and super-heater. An old camp stove was modified to provide a burner.

Engine and boiler alone required some 300 manhours. More time was spent in fitting rudder and single screw, building and detailing the superstructure, and more recently, in dropping the keel to lower the center of gravity.

To date, "Sea Fox" has spent about 50 hours in the water on Mission Bay Park's model basin. The power plant can generate 50 psi super-heated steam in eight minutes, and permits a 15-minute cruise using 40 psi constant pressure.

A radio control unit provides "ship-to-shore" communication (rudder action only) up to a one-mile range during operations.

Ogle has retained the hull mold and will lend it to other potential "sea captains," or consider building other hulls to order.

Technical Writing Courses Offered

Two technical writing courses will be open to all General Dynamics people during the fall semester through sponsorship of GD/Convair educational services and San Diego Junior Colleges.

Technical Writing 5, technical proposal writing, and Technical Writing 6, technical report writing, both carry 3 units of college credit toward the Certificate of Proficiency in Technical Writing under the San Diego Junior Colleges program. They will be taught in-plant by Louie Henderson.

Tech Writing 5 will be Tuesdays, beginning Sept. 15, from 5-8 p.m., Plant 1, Bldg. 14, Room 8. Tech Writing 6 starts Sept. 16 and will be held each Wednesday at the same time and place.

Prerequisites for both courses are Tech Writing 1, 2, 3, and 4, or permission of the instructor.

Enrollment may be made through L. W. Turner, ext. 491, Plant 1, or by submitting forms now on company bulletin boards.

GD/Astro Daughters Appear in 'King and I'

Three Astro daughters are now "veteran troopers" when it comes to musical comedy.

Rose Maria, 6, and Mary Jo Bakich, 9, whose father, George, is in Dept. 963-2, now appear as Siamese youngsters in "The King and I" at Circle Arts. Little Rose Maria, and big sister Anne Marie, 13, are also preparing for parts in Starlight's "Sound of Music."

Ann Marie started the parade to the footlights as a result of dancing lessons, and the younger girls joined in when she began to audition for roles. Two years ago, the two older Bakich girls appeared in Starlight's "Wizard of Oz."

ARA-CRA GARDENERS WIN DAHLIA SHOWS

Dahlia exhibitors from the ARA-CRA Garden Club garnered at least 10 trophies and 60 ribbons with their prize blooms at two large Southern California shows this month.

LaVonne (Convair Dept. 2-0) and Charles Splinter (Astro Dept. 759) took amateur sweepstakes at both the Inglewood Dahlia Show the weekend of Aug. 8-9 and at the Santa Ana Dahlia Show the following week. Mr. and Mrs. Al Hornby (he's Astro Dept. 972) swept sweepstakes in the advanced novice section at the Santa Ana show. Sweepstakes is based on overall points from first, second, third-place standings.

The Splinters also had best bloom in the amateur division at Inglewood and best large bloom for amateurs at Santa Ana. The Hornbys had best medium bloom at Inglewood.

Others among the 15 or so Garden Club displayers winning top honors at Inglewood were Arnold Carroll (Astro Dept. 142), best bloom; Clayton Finley (husband of Evelyn, Convair Dept. 14-4), best large bloom.

Commissioner Everett Henderson was one of the judges at both shows, although did not take part in evaluation of any divisions in which Garden Club members displayed.

Members will meet next Wednesday (Sept. 2) to see movies and slides taken by Carol and Charles Ulrey during their trip to South America.

Meeting will be at 7:30 p.m. in the Floral Association Bldg., Balboa Park.

Value Engineers To Hold Workshop

San Diego Chapter of Society of American Value Engineers will hold a workshop session at the first fall meeting Sept. 1, in the Mission Room of Mission Valley Inn.

"Develop Your Creative Thinking" will be the subject of Glen D. Hart, chief corporate value engineer for Aerojet General Corp. Hart is a pioneer in the value engineering field. He assisted Larry Miles, known as the father of the VE concept, during development of first value engineering principles at General Electric Co.

Dinner tickets are $3.75, including tax.

They may be purchased from Frank Urban, Astro ext. 1083; Wayne Turner, Convair ext. 2491; W. D. Garrett, GD/E Plant 1, ext. 2910; Roland Mansell, GD/E Plant 2, ext. 36.

Club Schedules Lake Weekend

An invitation to an "Autumn Weekend at Big Bear Lake" has been issued to all GD/Convair, GD/Astro and GD/E folk by General Dynamics Ice Skating Club.

The event is scheduled Sept. 25, 26, 27 at Big Bear's Wawona Lodge, site of similar outings over the past six years. Accommodations include hotel room with private bath for two to five persons, and housekeeping cabins for family groups.

Weekend activities will include swimming in Wawona's pool, hiking, horseback riding, cycling, ice skating and an informal dance on Saturday evening.

Per person price for the package of two nights' lodging and meals (breakfasts, poolside snack for Saturday lunch, and Saturday evening barbecue) is $12 per person with children under 8 years at half price.

Participants will arrange their own transportation.

Reservations (limited to a total of 100 persons) are being accepted at employee services offices at Plants 1, 71 and 19, with full price payable at time of sign-up. No refunds will be issued after Sept. 18.

Additional information is available from Barbara Gilliland GD/Astro, ext. 4041.

Fallbrook Shooter Wins CRA Gun Event

Bill Shrode of Fallbrook shot a 98 to win Class A division of the 16-yd. event at CRA Gun Club's last ATA registered trapshoot held Aug. 9 at Gillespie Field Range.

Jim Prewitt of Spring Valley took Class B with a 93. George Skurla broke a three-way tie for first in Class C after scoring 25 in the shoot-off. Skurla, Art Berry of Lemon Grove and Ellis Rhodes of San Diego all shot 94s in first round. Class D was won by Lee Myer of Lemon Grove with 89.

All 16-yd. winners won silver service pitchers as prizes.

Duke Higginbotham of National City was first in the handicap with a 93 and was rewarded with a silver service lazy Suzan.

W. U. Gatterman of Astro won the doubles and covered casserole prize with an 84.

Next big open Gun Club event will be the annual merchandise shoot this coming Sunday, Aug. 30.

GD/E and GD/Astro Men to Instruct

Everett A. Lindem of GD/Astronautics educational services and M. M. Reeder, GD/Electronics value control coordinator, will instruct value engineering courses this fall at the Mesa Campus of San Diego Junior Colleges.

The value engineering training is approved by the Society of American Value Engineers and will cover the same material presented in General Dynamics value vs. cost training courses.

Lindem will instruct a Monday night class, 6:30-9:30 p.m., and Reeder a Thursday evening class at the same time. Both will be held in Room MK-106 at the Mesa location.

Enrollment may be made at the SD Junior Colleges office, 835 Twelfth Ave., from now through Sept. 4, 5-8 p.m.

Weight Engineers Will Meet Aug. 28

Next meeting of San Diego chapter, Society of Aeronautical Weight Engineers (SAWE), will be held Friday (Aug. 28) at Harold's Fifth Ave. Restaurant, Fifth and Laurel.

Cocktails (6:30 p.m.), dinner (7 p.m.) and a business session will precede a talk by Dr. D. G. Mitton, vice president of chemical operations, Straza Industries.

New Salvage Hours Set For GD/Astro

New Saturday operating schedule for employee sales at GD/Astro salvage yard has been announced covering the balance of the year.

This Saturday (Aug. 29), both the GD/Astro yard (inside Gate 10, Plant 71), and the GD/Convair yard (adjacent to Gate 5, Plant 1) will be open during morning hours. Both yards will be closed Sept. 5, due to the Labor Day weekend.

After that, yards will open on alternate Saturday mornings. Astro sales dates are Aug. 29, Sept. 19, Oct. 3, 17 and 31, Nov. 14 and 28, Dec. 12. Convair sales will be held Aug. 29, Sept. 12 and 26, Oct. 10 and 24, Nov. 7 and 21, Dec. 5 and 19.

Home-Built Plane Lives up to Hopes

It flies! And both builder and his "boss" are happy about it.

"Little K," home-built bi-plane designed and constructed by A. A. Kovschak, Astro Dept. 972-0, **(GD/NEWS, Jan. 15)**, first took to the air from Ramona Airport July 17, and has operated successfully each weekend since.

Kovschak has been working on the plane for nearly three years as a hobby.

Nothing could have made Kovschak's supervisor, W. C. "Bill" Taylor, also Dept. 972-0, happier. A veteran flight instructor, Taylor was "test pilot" for "Little K's" first hop.

Society For Quality Control Will Meet

First fall meeting of the San Diego Section of American Society for Quality Control will be Sept. 14 at the Bronze Room restaurant in La Mesa.

Phil Kline, director of reliability of Aerospace Corp., will speak on testing requirements that produce ultimate reliability of product.

W. J. Martin, GD/Convair director of reliability, will moderate.

Dinner tickets are available through boosters at Astro, Convair, and GD/E.

GD/Astro Son Earns Fleet Scholarship

Earl H. Handwerker, 18, son of GD/Astro's Ben Handwerker, Dept. 405, is recipient of a four-year Reuben Fleet Foundation scholarship for outstanding work in Jr. Achievement.

Young Handwerker was president of "Brite-Lite Corp.," Kiwanis-sponsored first Jr. Achievement effort in Escondido. A life member of California Scholarship Federation, Earl will enter Columbia University next month as a pre-law major.

Noirez Completes Reliability Course

Max Noirez (Dept. 145-2) of GD/Astro recently received a certificate indicating successful completion of a 1964 Reliability and Statistics Course at UCLA.

The program was operated by the UCLA Department of Engineering at Los Angeles.

"FLIP" DARR NOW HEAD SWIM COACH

GD/Astro son Ralph P. "Flip" Darr, son of Francys Darr, Dept. 401-1, has been named head swim coach and trainer at Copley YMCA. Well known in state swimming circles, Darr set a record in the 1953 Venice, Calif., rough water event, and was a tri-winner representing the Navy in All-Service Championships.

When telephoning, never mind the weather. Get to the point. Telephone time costs money.

Astro Notes Plan Doubling Membership

A campaign by Astro Notes, ARA choral group, to double its membership in preparation for the performance-packed season up-coming, will kick off at an open meeting and rehearsal, 7:30 p.m., Sept. 14 in ARA Clubhouse.

The group is open to employees of all General Dynamics divisions in the San Diego area, and members of their families over 18 years of age. Prospective members are needed in all voice ranges. There are no "tryouts" and no reading knowledge of music is required.

Founded seven years ago as an outlet for GD folk who enjoy relaxation and sociability of group singing, Astro Notes has since become well-known throughout the community. The group appears regularly at various social clubs and for meetings of ARA activities, and during the Christmas season is welcomed at area hospitals for carolling programs.

Projected for the near future is a formal one-hour concert for GD families.

Walt Miner is ARA commissioner; Jim Pate, president; Jim Rogers, director; and Helen Pittman, accompanist.

Repertoire ranges from jazz and humorous numbers through "pops" and light classics. Practice sessions are held each Monday evening in ARA Clubhouse, and frequent social events are scheduled.

Feature spot on many programs is taken by Astro Notes' Barbershop Quartet. Soloists are Leo Bray of GD/Electronics, and Miner. This aggregation will seek a second tenor lead during the current "recruiting drive."

Astro and Gen. Atomic Men on Cal. Faculty

Fourteen Astronautics and General Atomic men are listed as members of the faculty of University of California Extension during the fall semester.

Astronautics men and subjects they will teach are: Raymond A. Elliott, "Introduction to Computing Systems"; James F. Haskins, "Advanced Engineering Mathematics"; Frank H. King, "Principles and Applications of Value Analysis"; Cyril H. Nute, "Advanced Engineering Mathematics," "Statistical Theory of Communication," and a section of the discussion program, "Contemporary Moral Issues"; Douglas L. Platt, "Fundamentals of PERT Planning and Control," and "Advanced PERT"; Theodore Rubin, "Probability and Statistics"; Robert W. Swanson, "Data Processing and Computer Programming"; Allan N. Wilson, "Computer Applications: Ordinary Differential Equations"; Bruno F. W. Witte, "Automatic Digital Computers," and Arthur T. Wood, "Contract Types and Incentive Procurement."

From General Atomic are: John K. Dienes, "Introduction to Mechanical Vibrations"; Eugene Haddad, "Nuclear Physics"; John Kirkbride, discussion program on "Issues of the Sixties"; and James Watson, coordinator of the lecture series, "An Atomistic Interpretation."

Schindler, Knutson Share Pistol Wins

Al Schindler fired 294 to win master class of a .22 Police Course match fired by ARA Pistol Club members Aug. 9 at San Diego Police Pistol Range.

Warren Ranscht scored 293 to place second in the upper echelon, while John Bennett (280) and Carl Jensen (276) were expert class winners. Sharpshooter bracket was led by Lee Messerli (285) and J. D. Powell (265).

A Center Fire match was won by J. S. Knutson with 286, followed by Schindler (282), Ranscht (274), and ARA Commissioner Bill Geopfarth (255).

Sports & Recreation

Sports Car Fans Prime Vehicles For Running of 'La Separateur'

ARA Sports Car Club will sponsor a unique rally Sept. 12 with the running of "La Separateur," a 300-mile event over "the worst possible roads in San Diego and Riverside Counties."

President Jack Gallant gave a free translation of the rally title as "the separator" of dyed-in-the-wool ralliests from the Sunday variety, and stated that it is patterned after European-style events.

Route instructions will be few and simple, and entrants will receive an advance course map to enable them to pre-run the route.

Entry fee is $5 per car, with applications available at the employee services office, from most sports car dealers, and from all ARA Sports Car Club members.

"La Separateur" is open to all motoring enthusiasts, whether or not they are club members.

All participating cars must be equipped with seat belts. Starting point is ARA Clubhouse parking lot, with the first car out at 10 a.m.

Detailed information is available from Gallant, ext. 2028, or Dennis Scannell, rallymaster, ext. 1316 or 2932.

BIG WINNERS — Players above represented GD/Astro in Lincoln, Neb., softball activities during past summer season. Team copped league championship (with 9-1 record).

Astro Softball Team at Lincoln Clobbers Opposition, Wins Loop

LINCOLN AFB — A team representing GD/Astro employees here in local softball competition has posted an outstanding record.

Team One, managed by E. A. Jipp, won nine games and lost one in regular season play in the A-3 Division 2 league. Final league game found the Astro nine copping the championship with E. P. Moddelmog and Jack Bronson sharing pitching honors and J. L. Leimbach banging out a grand slam homer in an 11-6 win over Bankers Life.

In the initial game of the inter-division play-offs, Astro followed the no-hit pitching of Bronson with a barrage of base hits to win 11-0. Key batters were Leimbach, D. P. Jump and M. Jump.

Leimbach held the highest batting average of the year, while Moddelmog was named the most valuable player.

Other team members were F. D. Garrison, D. D. Arce, J. E. Lorenzen, B. Bowen, B. Downing, J. T. Lumgair (coach), O. L. Davis, N. K. Frey and S. T. Ciulla.

SERVICE PARTS TEAM FACES 'RINKY DINKS'

An Astro team representing service parts (Dept. 336) and managed by Tom Petitt, will face the KOGO "Rinky Dinks" in a softball game at 7:30 p.m. tomorrow (Aug. 27) on ARA Field. No admission will be charged but a donation to the Heart Fund will be accepted.

Wives Club Bowling League Meeting Set

Astro Wives Club bowling activities for the 1964-65 winter season will get under way at 9:30 a.m. Sept. 15 at Clairemont Bowl.

A short meeting will precede actual bowling. All wives are invited to take part in this handicap league. No advance registration is necessary, but Ann Ragusa at 273-6264 will answer specific questions.

TAKING SHAPE — Some 32 members of ARA Sculpture Club now fill ARA Clubhouse art room each Monday evening for work on creative projects. Here Commissioner Francis Pall, left, gives helpful pointers to Nel Gross, club president. First club greenware was recently fired in ARA kiln. — Photo by Ed Freno.

BAKING — Recently added to many facilities available through ARA Health Club is complete sauna-steam room. Trying it out are, from left, Sandy Fall, Barbara Peterson and Florence Fall. Gals report loss of about one pound on average during sauna treatment. Memberships in Health Club are available at $12 for individuals; $18 for families.

Sauna Bath Is Latest Addition To Growing ARA Health Club

A gleaming new sauna is the latest addition to a steadily growing array of facilities available to members of ARA Health Club.

Now in operation, the sauna is available to members without additional cost during normal operating hours. (On "family nights" men and women alternate use of the sauna.)

Also available in the sauna lounge is a new ultraviolet sun lamp which may be used at nominal cost.

ARA's Health Club, located in the ARA Clubhouse, is now considered one of the finest in Southern California. Membership entitles individuals to full use of the entire Health Club and its facilities as well as the services of both a man and a woman instructor on duty during operating hours.

Cost for individual membership is $12 per year, with family memberships available at $18 per year.

New members are interviewed by instructors who help outline a program in line with the individual's desires. Further guidance is available at all times.

Operating hours are staggered as a convenience to members.

"Ladies only" sessions are featured from 9:30 to 11:30 a.m., Monday through Thursday and from 2 to 6 p.m. on Tuesday and Thursday.

Men have exclusive use of the club from 11:30 a.m. to 10 p.m. on Monday, Wednesday and Friday.

"Family hours," with the Health Club divided into ladies' and men's sections, are observed from 6 to 10 p.m. Tuesday and Thursday and from 10 a.m. to 5 p.m. on Saturday.

Information on the Health Club is available at ARA Clubhouse or through Director Frank Echevarria, ext. 1111.

Bowen, Hobbs Hold Top Explorers Posts

"Change of command," and a rousing round of activities booked for coming weeks highlight current news from ARA Explorers Club.

Dick Bowen, former president, has been appointed ARA Commissioner, and Frank Hobbs, vice president, has succeeded him in the group's highest elective post.

On Aug. 29, members and their families will gather in the ARA Area at 3 p.m. for activities climaxed by a Mexican-style barbecue at 6 p.m.

Then, Sept. 16, 7:30 p.m. in ARA Clubhouse, the club will be entertained by Jim Hardison of GD/Convair, veteran tour conductor for annual General Dynamics employees' excursions into Old Mexico.

Following the "south-of-the-border" theme, Explorers' September field trip will take them to the blow holes or sea cliff "geysers" at Puerto Banda Bay, south of Ensenada, Baja California.

ARA Bridge Players Earn Master Points

Winners at ARA Bridge Club's monthly Master Point night, Aug. 3, were Margaret Grindstaff and Ceil McCullough (N-S), and Mitzi Rustad and Burton Grindstaff (E-W).

On Aug. 14, Ed Lau and Francys Darr were N-S winners, while first and second place honors (E-W) were shared by Mr. and Mrs. Bill Hatherley, Freddie Combs and Bud Woodbury.

Bridge Club plays each Friday, 7:30 p.m. in ARA Clubhouse, and visitors are always welcome.

Bowling Entries Close Sept. 14

Entries are still being sought from individuals, couples and teams interested in taking part in ARA-sponsored bowling leagues this winter.

All leagues will begin operating the week of Sept. 14 with starting times at 6:15 p.m., except in special leagues.

Entry forms are now available through employee services outlets. Deadline for entering will be Sept. 4. Those with special questions may leave their number with ARA, ext. 1111. Bowling officials will contact them direct.

More popular leagues are being filled as entries are submitted. Those entering late may have to be shifted to leagues with available openings.

Most of ARA's older leagues are being continued, with a number of new leagues and locations included this year by popular demand. Now slated to operate, if interest warrants, are:

Clairemont Bowl: Tuesday, 850 men's scratch and 750-775 mixed handicap; Friday, 825 men's scratch and two mixed handicap (700 to 800); and Saturday, 4 p.m., father-son loop.

Parkway Bowl; Tuesday, 750-775 mixed handicap.

El Cajon Bowl: Thursday, mixed handicap.

La Mesa Bowl: Tuesday, mixed handicap; and Wednesday, mixed handicap.

Frontier Lanes: Wednesday, mixed handicap; and Friday, mixed handicap.

Pacific Beach Bowl: Thursday, mixed handicap.

ARA Calendar

(GD/Astronautics Recreation Association has some 40 activities in operation for employees. For information call ARA Headquarters, ext. 1111.)

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ASTRO NOTES—Season kick-off, meeting and rehearsal, 7:30 p.m., Sept. 14, ARA Clubhouse.

BALLROOM DANCING — Intermediate class opens Sept. 21. Interested intermediates (or beginners) contact L. F. Moeller, Mail Zone 191-00, via AVO.

BIG BEAR TRIP — Weekend at Wawona Lodge, Sept. 25, 26, 27. $12 per person. Sign up at employee services offices, Plants 1, 71, 19.

BOWLING — Winter leagues entries close Sept. 4. Sign up now for leagues at six major lanes beginning Sept. 14.

BRIDGE — Meets for play Fridays, 7:30 p.m., ARA Clubhouse.

CAMERA CLUB — Meeting scheduled for Sept. 6 is cancelled due to Labor Day weekend.

EXPLORERS — Mexican barbecue picnic for members and families, ARA Area, 3 p.m., Aug. 29.

FLAG FOOTBALL — Registration deadline Sept. 11, with season to open Sept. 21. Information and sign ups, ext. 1111.

GARDEN CLUB — Meeting Sept. 2, 7:30 p.m., Floral Assn, Bldg., Balboa Park.

GUNS — Annual open merchandise shoot, Aug. 30, Gillespie Field Range. Register for Hunter Safety Class by calling 448-1825.

SOFTBALL — Benefit game, Tamale Queens vs. Del Mar Jockeys, Aug. 26, ARA Field. Game times, 7.30, 9 p.m.

SPORTS CARS — European-style "La Separateur" rally, Sept. 12. Applications at employee services office.

Astro Rockets Open New Tourney Bid

Astro Rockets began their quest for honors in local ASA and SCMAF softball tourneys after a second place finish in the last half of the San Diego Open League.

SubFlotOne, Navy entry, won the league, while Astro is to meet Tamale Kings to decide the number two spot.

Rockets dropped a 1-0 decision to Linda Vista Cafe in the first round of the double elimination ASA tournament. George Cunningham pitched a solid three hitter, but an unearned run in the last inning spelled defeat for Astro.

Tonight (Aug. 26), the public may view a 9 p.m. contest between Tamale Queens, local women's champs, and Del Mar Jockeys at ARA Field. Preliminary game in the benefit event starts at 7:30 p.m.

First Ocean Data Buoy Launched, Awaits Storm Test Off Florida

Launching ceremonies were held last week for GD/Convair's first full-scale oceanographic buoy to be readied for initial tests off the Florida coast in time for the hurricane season.

The buoy is designed to gather ocean and weather data and radio the information to shore.

The 40-ft. diameter, discus-shaped buoy, one of two developed and fabricated at Convair under a contract with the Office of Naval Research, Washington, D.C., was put into the water at Jacksonville, Fla., Aug. 20.

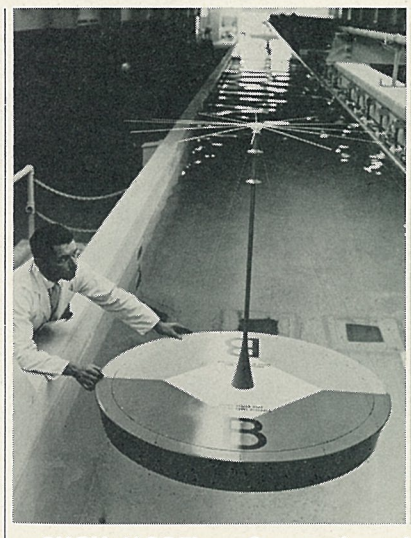
It will be towed early in September to the test area about five miles off the coast of Miami.

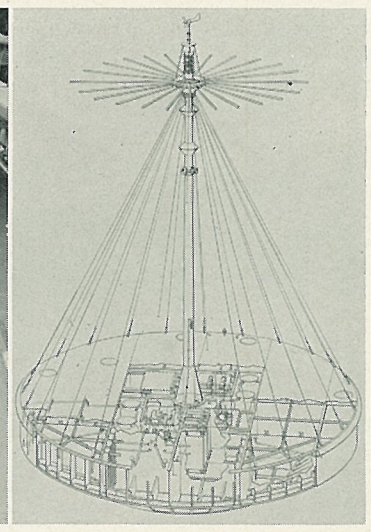
There it will be moored in shallow (300-ft. deep) water and remain for the next few months, or until it has been exposed to the full blasts of a hurricane, thereby proving its ability to withstand any type of weather.

Buoy B's designation, "Bravo," for the international code word, is especially fitting, points out Robert Devereux, Convair project manager for the oceanographic buoy development program, since it will have to survive the roughest kind of sea and air turbulence. (Prototype A "Alpha" will be put into West Coast waters later this year for a different series of tests.) Bravo was launched first to take advantage of the imminent hurricane season.

The Gulf Stream test series will permit Convair engineers to verify the buoy's seaworthiness and structural design characteristics under the severest conditions.

Other objectives of initial checkouts are to measure: the physical strain on critical structural areas, such as the mast and mooring line attach points; tension on the mooring line; acceleration of the buoy in three dimensions and angular motion; hull vibrations caused by wave impact; water pressures exerted on the hull; critical temperatures and voltages of the systems inside the buoy.





BUOY MODEL — One-tenth scale model of long-range oceanographic telemetering buoy developed by GD/Convair under sponsorship of Office of Naval Research, Washington, D.C., is tested in Convair towing basin by Ted Sladek of Convair marine sciences. At right, cutaway sketch shows location of telemetry and instrumentation equipment within pie-shaped steel hull, 7½-ft. deep. Eight compartments, four containing electronics and energy conversion equipment, four filled with plastic foam for flotation, are hermetically sealed and filled with dry nitrogen to protect equipment from salt water and moist atmosphere.

Convair's long-range telemetering buoy is termed the most essential feature in the development of a system for gathering and storing oceanographic data and transmitting it to shore stations from thousands of miles out at sea.

The buoys can be equipped with more than 100 oceanographic and atmospheric data-gathering sensors for acquisition of oceanographic and atmospheric data which can be stored up to a year and transmitted to shore upon radio command. **(GD/NEWS, March 25, 1964.)**

The buoy carries maritime safety equipment — a high-intensity xenon flashing collision-avoidance light which will last a full year, and an automatic fog signal.

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Steel hull for the 55,000-lb. red and yellow buoy was fabricated at the Jacksonville Shipyards. However, other main components making up the complex telemetering "sea stations" are being produced at Convair.

Production departments at the San Diego division, including tool fabrication, sheet metal, welding, plastics, and experimental, have played an important part in construction of parts.

Built in-plant were the 40-ft. hollow steel schnorkel mast with outlet duct for engine exhaust and two air inlet ducts for the electric generators; instrumentation and cable assemblies; impedence-matching coil; fiber glass antenna, which may be the largest of its type ever fabricated; the antenna mount which holds the antenna radials and tripod for support of a device to measure wind direction and velocity, and the mooring attachment pin and dynamometer for measuring tension in the mooring line.

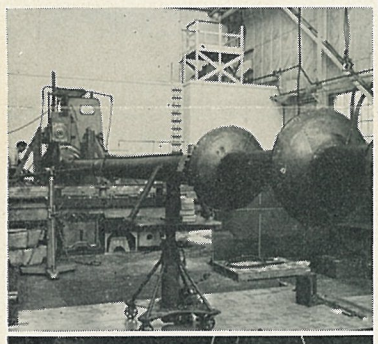
The mooring pin's instrumented universal joint is bolted to the bottom of the buoy, attaching through the skin to the main structure. It permits measurement of the angle of the mooring line at all times to allow Convair engineers to determine just how much the buoy's angle influences data recorded during wave changes.

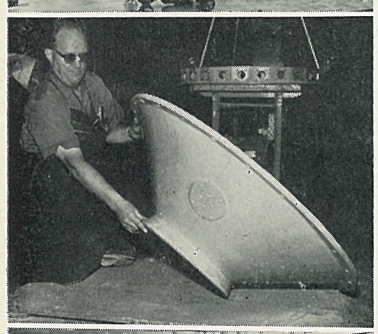
The helix coil located in the center of the buoy hull acts as a terminating impedence for the transmission line and as a lightning protector to keep most of the electrical current from flowing down the center of the transmission line, thus protecting electronic equipment. A fiber glass core, formed in Convair plastics, supports the copper coil to keep it from collapsing from the electrical current that would pass through it in the event a lightning bolt should strike the buoy.

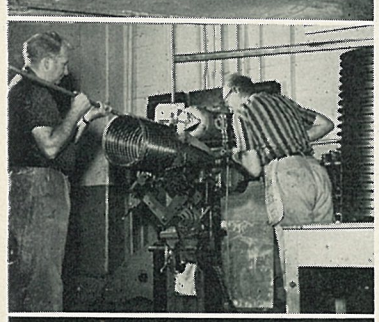
The large 45-in. diameter insulator, the coil, and transmission line which feeds power to the buoy's discone antenna are uniquely designed with electrical conductors running through the inside of the transmission line's center conductor so that signal wires from the instrumentation on top of the antenna disc will not cause a short circuit of the antenna insulator.

The two engine generators for the prototype buoy were put through accelerated checkouts at the Convair plant, running the equivalent of six months at sea, twice as long as the preliminary test series. Six months time was compressed into about two months with the engines running three hours on and three, off. In actual operation each generator normally will operate three hours a day.

Operation is controlled by automatic programming equipment which tells the generators to start, or stop, charging batteries, switches generators at regular periods, cuts one out of the system in case of failure.







IN WORKS — Buoy components during fabrication at Convair are (from top): 40-ft. hollow steel mast being machined on Lucas boring mill in tooling; L. D. Rush (Dept. 131) with large 45-in. diameter and 14-in. deep insulator, one of largest of its type ever made. (Insulator and fiber glass core for helix coil were formed in plastics department.) In next shot, L. S. Meland at right and J. H. Hammer, both of Dept. 101, roll copper channel for helix coil in spiral on contour roll machine; and in bottom photo, Rush, S. W. Trotter, H. C. Cook, all of experimental, place antenna mount on insulator.

Uyeda Named Deputy Mgr.

S. T. Uyeda, who was responsible for the development of the oceanographic buoy configuration and coordination of design at Convair, has been named deputy project manager for the program, announced Robert Devereux, oceanographic buoy project manager.

Uyeda, who has been directly in charge of fabrication of the first prototype buoy at Jacksonville, Fla., Shipyards, is directing the test program in the Florida straits. He has been associated with the program since its inception nearly five years ago.

Warren Hoover, who designed the buoy's energy conversion system, will be in charge of the West Coast test series, reporting to Uyeda.

Ken Jones, also based at the Florida location during preliminary test stages, is responsible for preparation of all instrumentation and telemetry for the prototype tests. Jones, formerly assigned to the Little Joe II as instrumentation engineer, joined the buoy program early this year. He brought into the oceanographic buoy program a wide background and extensive experience in instrumentation, said Devereux, and was able to put together the engineering data acquisition system in three months, half the time normally required on similar large programs.

Convair Man Authors Book About Fatigue

"Tips on Fatigue," prepared by GD/Convair's Clarence R. Smith for the Bureau of Naval Weapons, is now available to the general public through the U.S. Government Printing Office, Washington, D. C.

The book, profusely illustrated with photographs, cartoons, and graphs, deals with the fatigue problems of metal structures. It was compiled as a simple guide on how to recognize potential fatigue problems, rectify existing problems, and avoid getting into situations that may cause problems.

Smith, a fatigue specialist, prepared the material over a year and a half under a Navy contract.

Copies are priced at 70 cents.

OLD TIMER — Fred Lee of GD/Astro holds "Old Tom," a seven-year veteran of Sycamore Canyon Test Site operations. "Old Tom" lives in test stand areas (like S-4 in background), always quits area prior to tests and stays away until "all clear" is sounded.

Cautious

Astro Feline Wary of 'Runs'

Like most Felis catus, "Old Tom" has a built-in warning system for dangerous situations.

Big, black and cautious, he has survived for more than seven years as an unofficial mascot in the test stand areas of GD/Astronautics' Sycamore Canyon Test Site. He is a "veteran" of both Atlas and Centaur tests.

When personnel begin evacuating test stand areas in preparation for engine runs or fueling tests, "Old Tom" can be observed hot footing it over the nearest hill where he stays until well after "all clears" are sounded.

He arrived at S-1 in the early days of the Atlas program and set up "residence." He ate handouts and caught an occasional mouse or ground squirrel. He slept where he liked.

After S-1 was damaged in a test incident, "Old Tom" disappeared for several months. Then he returned to S-4 and resumed his routine.

His friends admit he's slowing down, preferring the cat food provided him to handouts and adopting a let-live attitude. Night crews say they have seen him sharing his food with a small mouse. And he spends more time in the soft bed provided for him than ever before.

But one thing is certain—his warning system is as good as ever. He still hustles out of the area when he notes preparations for tests!

Converted Bus Will Receive Radio Signals From Buoy Anchored 5 Miles Off Shore

A shining, silver Greyhound bus takes on a new role, and a new look, as a mobile ground station for Convair's oceanographic buoy program.

Purchased in San Francisco, the vehicle has been rehabilitated at Convair. The interior was entirely replaced with carpeting, reupholstered seats, new panels and ceiling with Dept. 131 doing the work.

Instrumentation equipment to command and receive data from the buoy's telemetry package was installed together with air conditioning so that "design limits of equipment and operators will not be exceeded," in the words of Convair engineers.

It will be used first to check instrumentation and telemetry in the buoy at Jacksonville.

When the buoy is moored in the Miami test area next month, the vehicle will be parked on-station near the tall building where antennas will be located.

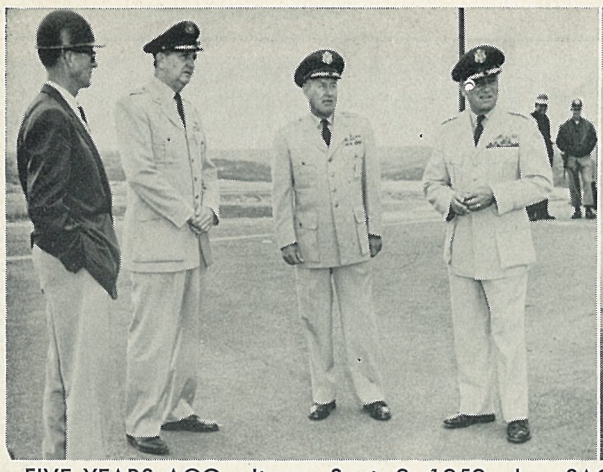
Telemetry data from the buoy will be picked up on the ground station's tape recorder and direct writing recorders. Tapes will be mailed back to Convair for processing in the flight test data station.

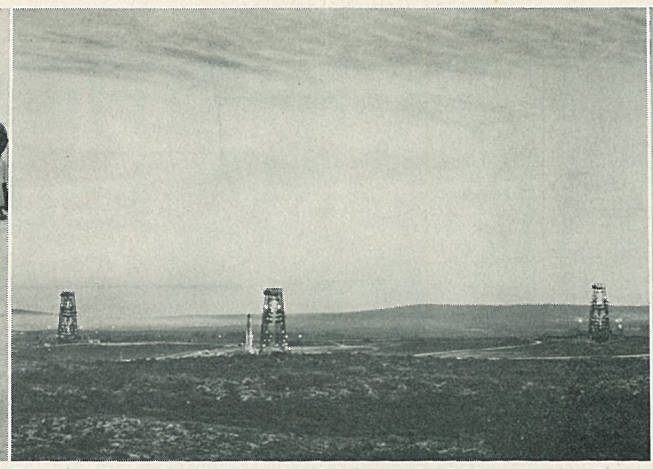
Ken Samples, assistant project manager, directed the bus conversion with J. S. Breeden, furnishings engineer, responsible for exterior and interior refitting.

Tartar and Terrier Models on Exhibition

Full-scale models of Tartar and Terrier supersonic missiles were on display at Port Huenneme, Calif., during a week-long open house celebration earlier this month. Tartar and Terrier missiles, produced at GD/Pomona, now provide anti-aircraft protection on 52 ships of the U. S. Navy.

READY TO ROLL — GD/Convair engineers, Jack Thayer, Bill Ellison, Warren Hoover, step aboard mobile ground station, converted Greyhound bus, for cross-country trip from San Diego to Jacksonville Fla., where they will check instrumentation and telemetry in the buoy. Seated within refitted bus is Ken Samples, oceanographic buoy assistant project manager. Standing is Joe Breeden, furnishings engineer, who designed refitting. At far right is Robert Devereux, project manager, at instrumentation panel which will record data from buoy during tests.





FIVE YEARS AGO—It was Sept. 9, 1959 when SAC crews launched Atlas 12-D at Vandenberg AFB and missile was declared operational. At left, on hand for shoot were W. Fenton Miller, Astro base manager; Maj. Gen. David Wade, then commander of 1st Missile Division; Gen. Thomas S. Power, SAC commander; Maj. Gen. A. J. Old, commander of 15th Air Force. At right was Astro crew present as back-up which included Donald Fagan, now Astro director of operations-WTR. Center is sunset scene at Vandenberg, showing three initial Atlas sites. In years since, 100 Atlas launches have taken place at Pacific Coast base.

GD

ASTRONAUTICS EDITION

GENERAL DYNAMICS NEWS

Vol. 17, No. 19 PUBLISHED BY GENERAL DYNAMICS CORPORATION Wednesday, September 9, 1964

Business Courses Help to 'Keep Up'

A first-of-its-kind opportunity for all General Dynamics people in San Diego to keep abreast of advanced technology in the fast-moving business field is offered this fall as GD/Astronautics and GD/Convair

(Continued on page 4)

COST REDUCTION AWARDS GRANTED

Certificates recognizing Cost Reduction Projects implemented by GD/Astronautics employees within the controller's organization were presented recently by Controller E. G. Hill, and J. H. Johnson, director of management systems.

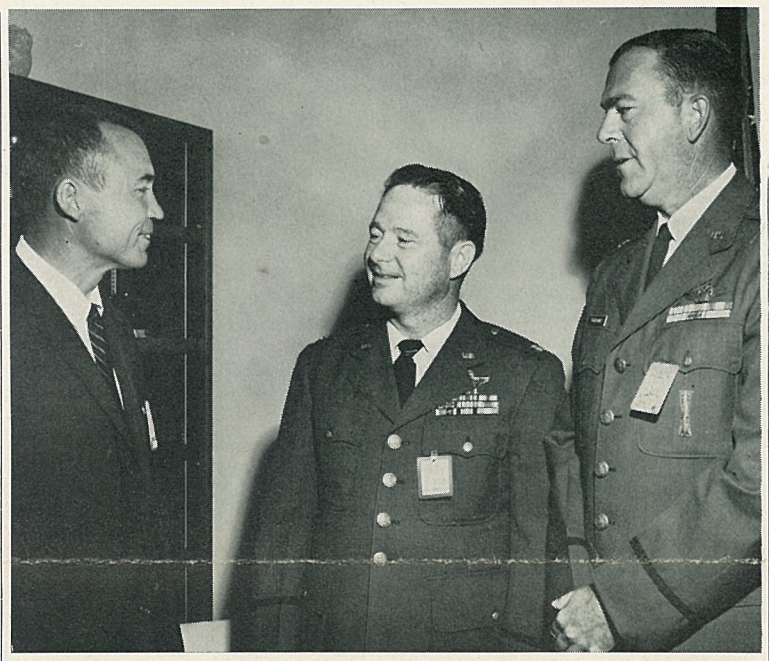
Savings for the year to date total $516,269.

J. G. Godfrey of division systems was "top saver" of the group, with two implemented projects with savings totalling $84,113. Next in line were P. T. Brass and J. A. Dematteis of industrial accounting with two CRPs each, credited with saving $46,290 and $41,638 respectively.

Charlotte H. Bowen of division systems also topped the $25,000 mark with her project which saved $25,997.

Others who received certificates for completed CRPs were Estella Fox, J. C. Abels, Alfred Goodearl, F. G. Pallan and R. W. Kleinhans of division systems; C. C. Hays, W. O. Rock, C. D. Dismuke and J. M. Baker of data processing operations; C. E. Fabian of configuration management; and C. F. Wommer of industrial accounting.

Savings of $152,423 are credited to settlement of subcontract claims by the division's subcontract termination team and the subcontract audit function.



DISTINGUISHED VISITOR—Colonel Leo W. Sullivan, center, who recently assumed duties as Director, SLV-3, and Deputy for Launch Vehicles, Air Force Space Systems Division, was greeted by C. S. Ames, left, vice president and program director-SLV, and Lt. Col. J. D. Fairbanks, right, deputy AFPR, upon visiting GD/Astronautics last month.

FLOX Tested to Boost Atlas Lifting Capacity

With completion of a second series of FLOX tests announced late last month, GD/Astronautics moved still closer to significant increases in the lifting capacity of its reliable Atlas launch vehicle.

FLOX—a supercold mixture of fluorine and oxygen—is being reviewed by Astro, under NASA contract, for use as a fuel oxidizer for Atlas. Under study is addition of 30 per cent liquid fluorine to the pure liquid oxygen presently used by Atlas to oxidize its RP-1 fuel.

The test programs are being conducted to determine effects of FLOX on Atlas space launch vehicle tanks, components and systems.

Liquid fluorine breaks down into hydrofluoric acid—a violent corrosive, difficult to contain in many materials, including most metals—if it comes in contact with water.

In an initial test series, mois-

(Continued on Page 2)

Astro SLV Project Running FLOX Tests

FLOX tests are being conducted within GD/Astro space launch vehicles project, under C. S. Ames, vice president and program director—SLV.

Analysis indicates that use of a 30 per cent FLOX mixture can increase Atlas' payload lifting capacity as much as 88 per cent for 100-mile-high orbits; increase Atlas lifting capacity 65 per cent on earth-escape missions; and increase Atlas lift capacity for Centaur to allow for a 35 per cent weight increase of the Surveyor spacecraft which GD/Astro's second-stage Centaur will launch for soft landings on the moon.

J. W. Coddou is program manager, FLOX-Atlas, reporting to R. W. Keehn, assistant program director, LV-3C and FLOX.

CONGRATULATIONS—Erle G. Hill, right foreground, GD/Astro controller, congratulates John Godfrey of division systems on two Cost Reduction Projects which have saved division $84,113. Others in group have received certificates recognizing their CRP achievements recently from Hill, or from J. H. Johnson, director of management systems.

Historic Atlas 12-D Launch Recalled

VANDENBERG AFB — Five years ago today (on Sept. 9, 1959) a Strategic Air Command (SAC) crew launched Atlas 12-D from this base to a selected target area 4,300 statute miles away near Wake Island.

This was the first operational launch of an Atlas ICBM.

General Thomas S. Power, SAC commander and an eyewitness at the launch, called the effort "a tremendous milestone in the history of the Air Force—a successful team effort of American science, industry and the Air Force."

Behind the launch was an extensive research and development program with a single objective—the establishment of the nation's first ICBM capability. Ahead was the ultimate deployment of Atlas at operational SAC bases.

Since that time, approximately 100 Atlas launches have followed here, either in support of that capability, in the form of space missions, or in support of related programs.

General Dynamics/Astronautics employees have played a very important part in each launch, more often behind the scenes than in the limelight.

Initial Astro personnel assigned here reported in during the spring of 1958, W. Fenton Miller was the first base manager, followed by the late Tommie Zannes (1960-62), Kenneth E. Newton (1962-63) and Donald L. Fagan (since 1963).

Key personnel at the onset came from San Diego and Astro installations at Cape Kennedy and Edwards Rocket Site. Vandenberg, in turn, contributed heavily to forces gathered to install and check out Atlas launch and service facilities at SAC operational bases across the nation. At the peak employment period, 2,000 Astro employees were on hand.

Under the Air Force "concurrency concept" operational type Atlas facilities were actually under construction here while research and development tests and flights were in progress.

At Vandenberg is found every type of operational launch complex built for the Atlas weapon system — gantry-type launchers; both above and below ground horizontal launchers; and underground silo facilities. In addition, there are launch complexes for Atlas/Agena-boosted space missions.

Before each type of operational launcher was ultimately deployed at SAC bases, it was proofed here. Updating tasks subsequently programmed were first tried out here. Standards and procedures perfected here ultimately found their way into almost every type of defense missile system following Atlas.

Thus, operations carried out at

(Continued on Page 2)

SYMBOLIC—Until Atlas became operational five years ago, B-52 was SAC's long range arm. Bomber is shown in symbolic photo, with Atlas at Vandenberg AFB in foreground.

FLOX Tested to Boost Atlas Lifting Capacity

(Continued from Page 1)

ture was held to a minimum and stainless steel specimens were immersed in 30 per cent FLOX for up to 200 hours without adverse effect. Other tests were conducted at GD/Astro's Sycamore Canyon Test Site.

The latest series involved use of 50 per cent liquid fluorine (by weight) in the FLOX mixture, in order to determine if component performance characteristics observed using the 30 per cent mixture were marginal, or if they were well within desired limits for Atlas flight.

(Boil-off from a 30 per cent liquid fluorine mixture can produce concentrations in excess of 30 per cent gaseous fluorine. Fluorine "boils" faster than the liquid oxygen with which it is mixed, and the resulting gas consists of more fluorine than oxygen.)

Research indicates that FLOX can be used in Atlas without extensive modification of existing Atlas systems—vitally important because of the high reliability achieved with those systems.

'One Day Only' Enrollment Set For Courses

An entirely new enrollment procedure will be followed this year by GD/Astro employees wishing to enter in-plant San Diego City College courses starting next week.

A one-time-only registration session covering enrollments in all classes will be held at 5 p.m., Sept. 14, in the Plant 71 cafeteria, Bldg. 8. This procedure is being used in lieu of the "registration at first class session" method employed in previous years.

Potential students who fail to attend the Sept. 14 enrollment meeting may be charged with one regular absence from class, and can be barred from subsequent enrollment this term.

Those students residing outside San Diego Unified School district must present special contract permits from their district of residence at the Sept. 14 meeting. Residents information may be obtained from City College admissions office, 234-8451.

Thirteen classes will be offered this term in mathematics, business management, technical writing, supervision, etc. Recently added to the in-plant curriculum are Electronics 75 (Introduction to Digital Computer Systems) and Math 19 (Calculus for Electronics).

All classes will hold regular meetings after working hours in Bldg. 17, Plant 71.

NON-GRADUATES GIVEN REMINDER

With opening of a new school year, GD/Astro employees who failed to complete high school have been encouraged to consider earning a diploma now through San Diego's adult high school program.

Employees considering a return to school through evening study have been urged to contact educational services (Laura McGraw), ext. 1931 at Plant 71.

In-plant counseling on high school education may be provided through arrangement with San Diego City Schools, if employee interest warrants.

Six adult high schools are operating in the immediate San Diego area (Northwest, Clairemont, Midway, San Diego, Hoover and Memorial), and similar institutions function in adjacent school districts.

During 1963, one of every seven students who received high school diplomas from City Schools was an adult.

Log Book Entries

Clarence E. Damschroeder Jr., Dept. 403-3, recently received his 25-year service emblem.

Service Emblems

ASTRONAUTICS

Service emblems due during the period Sept. 1 through Sept. 15.

Twenty-five-year: Dept. 951-2, D. G. Clark.

Twenty-year: Dept. 652-2, D. W. Swanson.

Fifteen-year: Dept. 032-4, Albert Wittenberg; Dept. 421-1, P. P. Clement Jr.; Dept. 451-0, N. B. Coffinbarger; Dept. 759-0, J. C. Arnold Jr.

Ten-year: Dept. 036-0, R. J. Jacobs; Dept. 143-2, Mary Tuskes; Dept. 193-0, J. G. Fielder; Dept. 410-0, C. F. Devin; Dept. 565-3, R. C. Hinck; Dept. 591-4, J. R. Nichols; Dept. 592-1, W. E. Witzell; Dept. 630-0, Anne B. Chamberlin; Dept. 641-1, J. B. Skibinski; Dept. 780-2, L. H. Lesh; Dept. 801-0, F. L. Packard.

ALTUS AFB

Fifteen-year: Dept. 391-3, A. R. Dyer.
Ten-year: Dept. 391-1, G. W. Smith Jr.

SCHILLING AFB

Twenty-year: Dept. 390-2, A. J. Baskin Jr.

VANDENBERG AFB

Ten-year: Dept. 576-4, J. B. Bennett.

Papers Presented

BRANDENBERG—W. M., Dept. 596-0. "Focussing Properties of Hemispherical and Ellipsoidal Mirror Reflectometers," submitted to Journal of the Optical Society.

CAMPBELL—M. D., Dept. 592-1. "Adhesion of Solid Nitrogen," submitted to Journal of Applied Physics.

PURVIS—Donald W., Dept. 564-4. "Combined Environmental Test Facility," submitted to Institute of Environmental Science.

ROTHE—Erhard W., Dept. 596-0. "Recent Measurements of Atom-Atom Collision Cross-Sections," American Chemical Society, Chicago, Aug. 31-Sept. 4.

SOWLE—D. H., Dept. 596-0. "Calculation of Average Radiation Fluxes," submitted to AIAA Journal.

Retirements

BARICH—Louis J., Dept. 332-1. Seniority date, July 19, 1959. Retired Sept. 1.

GIDEON—O. H., Dept. 700-0. Seniority date, June 21, 1951. Retired July 24.

KAMINSKI—John S., Dept. 250-4. Seniority date, March 25, 1960. Retired Aug. 1.

FRIENDS RALLYING TO MARGARET ANN

GD/Astronautics friends of Margaret Ann McElleney, formerly of shipping department, are currently rallying to her assistance. Mrs. McElleney has had three operations for cancer in the past year. Those interested in details may contact Ruth Lindsay of Dept. 833-3, ext. 3516.

General Dynamics NEWS

Published by General Dynamics Corporation, One Rockefeller Plaza, New York, N. Y. 10020; with editorial headquarters at 3302 Pacific Highway, San Diego, Calif. 92112, P.O. Box 1950, telephone 296-6611, ext. 1071. Logan Jenkins, editor-in-chief.

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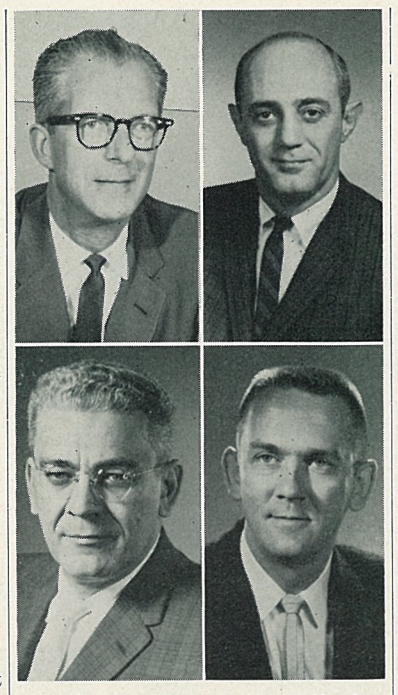
* * *

Affiliated editions of General Dynamics NEWS are published in Rochester, N. Y., covering GD/Electronics and Stromberg-Carlson, editorial offices, 100 Carlson Road, HUbbard 2-2200, ext. 2555. Fred E. Voss, editor; and at Groton, Conn., covering GD/Electric Boat, editorial offices at Groton, HIlltop 5-4321, ext. 300 and 513, Joseph Tracey, editor.



GD/Astronautics managers at Vandenberg AFB facility, from start to now: Top left, Fenton Miller (1958-1960), top right, late Tommie Zannes (1960-1962), lower left, Kenneth Newton (1962-1963), lower right, Donald Fagan (1963 to present).

NEW FORM TO SPEED INSURANCE ACTION ON EMPLOYEE CLAIMS

A new claim form and filing procedure to provide more efficient processing of group insurance claims for GD/Astronautics employees will be placed in use next week by the employee services section of industrial relations (Dept. 130-5).

Claim form improvements include: combination of both the employee's claim statement and the physician's statement on a single form; explicit instructions and information for use of both doctor and employee to aid in supplying complete and accurate insurance data; and an optional "assignment of benefits" statement included on the form.

Use of the new form will significantly ease the physician's task of supplying insurance information. The form incorporates a "self-mailer" for added convenience.

After each claim is paid, the insurance company will now supply the employee involved with a detailed report of all facts and figures relative to his claim.

Conference Job Goes To 'Russ' Medlock

L. I. "Russ" Medlock, GD/Astronautics manager of quality control, has been appointed vice chairman of the American Society for Quality Control Western Region Conference for 1964-65.

This affair features an exchange of ideas and experiences in use and application of quality control. Members include representatives of industry, NASA, Air Force and governmental agencies. As many as 1,500 scientists, engineers and administrators, as well as educational leaders annually take part.

Medlock is past chairman of the San Diego Section, ASQC.

Ex-Plattsburgh Folk Will hold Reunion

Plans for a family reunion of former GD/Astronautics employees at Plattsburgh AFB during construction phases of Atlas operational facilities there have been formulated.

Those interested will gather at 1 p.m. Sept. 20 at the New York covered wagon at Knotts Berry Farm, Buena Park. Arrangements are being handled by John A. Durr, GD/Astro Dept. 146-4, and Ed Scott, now of Lancaster.

EVANS, WILLIS ELECTED TO NAA CHAPTER BOARD

Two GD/Astro men were elected last month to the board of directors, San Diego Chapter, National Association of Accountants. C. G. Evans, labor accounting general supervisor, and J. H. Wills, cost accounting supervisor, will serve the chapter as associate directors of meetings.

Historic Atlas 12-D Launch Recalled

(Continued from Page 1)

Vandenberg over the years have had a vital and direct bearing on many other operations.

Astronautics' basic duty has been to directly support the Air Force in every phase of the Atlas program. This ranged from the installation and checkout of launch and service facilities to the design, fabrication and installation of elaborate crew training devices. It covered direct assistance to the Air Force launch crews and, in some cases, the carrying out of actual launches. It embraced training of crews, both in classrooms and on-the-job.

Above all, Vandenberg operations have been a joint effort in which Astro and its associate contractors have coordinated every step with Air Force counterparts.

Time schedules were compressed. Facilities included automated and complicated systems being installed, for the most part, the first time as total components. Countdowns were planned in minutes, not hours.

Col. W. S. Sheppard, initial 1st Missile Division commander, wrote:

"We are in the formative stage of missile methodology . . . no pattern has been established."

Col. L. L. Jella, USAF, ret., was then deputy commander of the 576th Strategic Missile Squadron. He said, "If we learned one thing here, it was the value of teamwork — the vital necessity of cooperation. And what we learned here later proved extremely helpful in the activation of other SAC bases."

Paperwork, shortages and ingenious solutions to unexpected problems by many people are recalled by Gene Sims, the first engineer assigned here (now an assistant site manager).

Irving Kurman, supervisor of data analysis, remembers long, long work weeks. Mrs. Kurman always started each day with: "Do you want two or three meals in your lunch today?"

Like other "early settlers" at Vandenberg, Astro folk faced problems—offices were converted barracks of World War II vintage, roads were hazardous to and from local communities, housing was scarce, there was no public transportation. (Trip to San Diego via airlift was easier than getting to nearby Santa Barbara via public conveyance.)

Roger (a missile technician) and Luci (a secretary) Pewsey solved the acute housing problem by buying a trailer in which they still live.

Astro folk have been accepted into the local communities, sharing civic duties, holding offices, etc. And they have contributed more than $125,000 through their Con-Trib-Club.

Maj. Gen. David Wade, 1st Missile Division commander, added the fitting climax to the 12-D launch when he announced, less than two months later:

"The Atlas squadron at Vandenberg AFB is now integrated into the Strategic Air Command's emergency war plan, and is ready to launch on 15 minutes notice."

This was the long-sought ICBM capability.

'Firsts' Scored At Vandenberg

A number of Vandenberg AFB "firsts" have been among the approximately 100 Atlas launches since the initial Sept. 9, 1959, operational flight.

For instance, the first Atlas launched from a semi-hard horizontal site was on April 22, 1960, followed by the first Atlas from a silo launch complex on Aug. 1, 1962.

The first West Coast launch of an Atlas/Agena combination was on Oct. 29, 1960, with the first target vehicle for the Nike-Zeus program launched July 19, 1962.

Atlas set a West Coast distance record of 7,000 miles on July 12, 1962.

Two Atlas launches on Aug. 9, 1962, demonstrated the ability of SAC crews to utilize multiple countdown and launch procedures in brief time span.

And on Dec. 18, 1963, three Atlas launches within a 24-hour period were accomplished from Vandenberg AFB.

VANDENBERG AFB UNIQUE, VERSATILE MISSILE FACILITY

Within the 100 square miles composing Vandenberg AFB, the Air Force has fashioned a remarkable facility.

It is a true operational defense installation in that it stands ready to launch long-range missiles, like Atlas, in retaliation to any aggressor.

It affords the Strategic Air Command a site for testing its arsenal of missiles—the only location from which missiles may be launched from operational facilities in peacetime.

Missilemen previously schooled in the many skills required in modern missile technology are brought here to weld those skills into combat-ready crews. Crews, in turn, may return for further training to launch missiles.

Vandenberg AFB has at least one launch complex of every type found at operational SAC installations.

The base supports Air Force System Command (AFSC) and National Aeronautics and Space Administration missile tests and space missions and is the only location from which polar-orbit satellites may be launched safely.

Facilities at nearby Pt. Arguello, once operated by the U. S. Navy, are now a part of the overall Vandenberg AFB complex.

The 1st Strategic Aerospace Division (1st StratAD) of the Strategic Air Command control the base. Its commander is Maj. Gen. S. W. Wells. Previous commanders of 1st StratAD and its predecessor, the 1st Missile Division, were Col. W. S. Sheppard, Maj. Gen. David Wade and Maj. Gen. J. J. Preston.

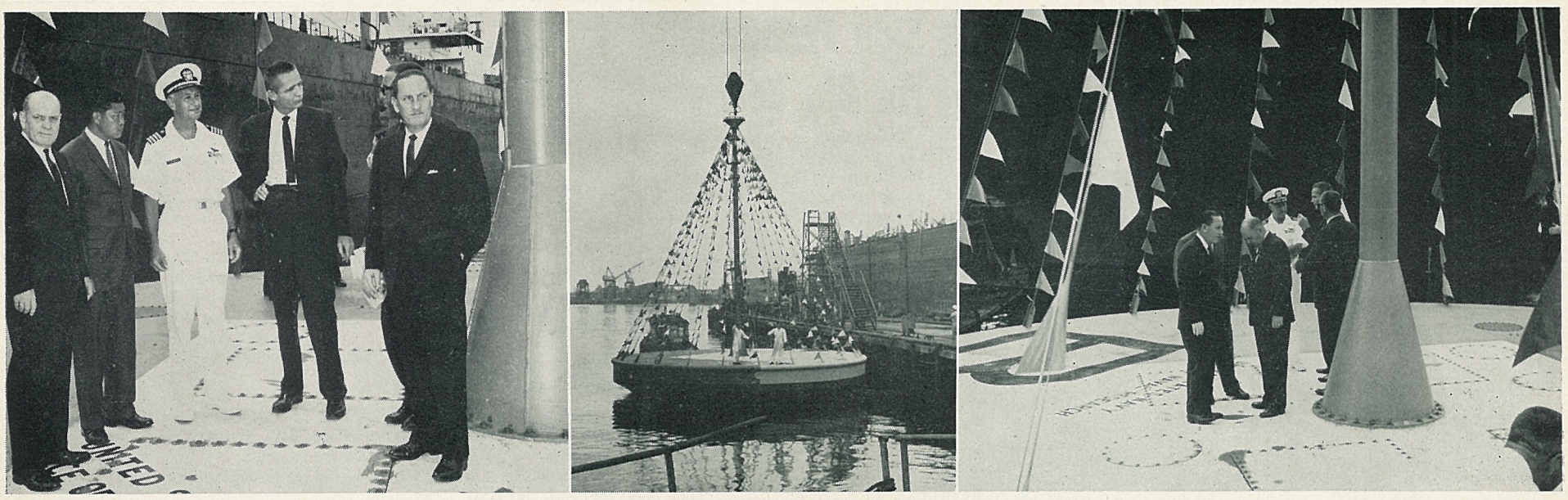
A principal tenant organization is AFSC's Headquarters, Western Test Range, under Brig. Gen. Jewell C. Maxwell. The 6596th Aerospace Test Wing, AFSC, is also a key tenant.

Other on-base SAC units include the 3901st Strategic Missile Evaluation Squadron and the 4300th Support Squadron.

Approximately 750 Astronautics employees are assigned here under Donald L. Fagan, director of operations—WTR.

Heading key functions under Fagan are A. H. Hoines and C. A. Johnston, managers of launch operations for Atlas Weapon System and Space Launch Vehicles respectively; Irving Kurman, supervisor of data analysis; Len L. Jella, manager of administrative support; E. A. Millar, manager of operations support; George W. Cooper, manager of quality control; Philip G. Stone, chief of industrial relations; and Frank B. McQueary, base controller.

The list of contributors to the Atlas program at Vandenberg AFB would fill volumes. However, program veterans are quick to recognize the work of Col. (now Brig. Gen.) J. J. Cody Jr., who headed the old Ballistic Missile Division field office at Vandenberg and also commanded the 6595th Aerospace Test Wing.



BUOY LAUNCH—First launching of Convair-designed oceanographic buoy at Jacksonville, Fla., late last month (Aug. 20) was termed "highly successful." Feenan Jennings, head oceanographer for Office of Naval Research which is sponsoring program, lauded Convair for development and design of prototype, first step in world-wide ocean and atmosphere information gathering network. In center, 40-ft. buoy, weighing 25 tons, is carefully lowered into river by huge crane. At left, Convair President J. H. Famme; S. T. Uyeda, Convair deputy project manager; Capt. John Mckroth, commanding officer at NAS, Jacksonville; Jennings; Robert Devereux, Convair project manager for buoy program; Martin Kerwin, president of Jacksonville Shipyards which built buoy hull, stand on buoy's deck. Size of buoy can be seen at right with same group small in comparison with large steel mast. Buoy will be on station off Miami by middle of this month.

First Step Near for GD Merit Scholars of 1966

All General Dynamics sons and daughters entering school this semester as high school juniors, should take the first step toward qualification if they wish to be considered for annual General Dynamics Merit Scholarships.

Students who will graduate in 1966 may apply now to take the National Merit Qualifying Test given next March to second semester juniors or first semester seniors. Application must be made through the student's individual high school counseling office.

Semifinalists in the current 1964-65 program will be announced on Sept. 24. These are seniors who qualified in initial tests administered this March for scholarships awarded next spring.

These semifinalists will be asked to take the scholastic aptitude test of the College Entrance Examination Board on Dec. 5, 1964, if they have not already taken it. They will indicate their college choices and their major fields of study. The college choices are open to change any time up to Jan. 1, 1965.

Students whose school records, recommendations, and second test scores support their qualifying test performance will be named finalists. Actual winners of scholarships will be determined by final evaluations by the Merit Scholarship Selection Committee, a panel of 16 educators from various sections of the country, Jan. 19-22.

Scholarship winners for 1964-65 will be announced April 28, 1965.

Each Merit Scholarship is a four-year award, ranging in amount from $250 a year to a maximum of $6,000 for the entire four years, depending upon family financial circumstances and cost of attending the college or university chosen.

All natural and legally adopted children of General Dynamics Corporation employees are eligible to compete. Employees must have completed at least two years of continuous company service by the end of the year before date of awards.

Sons and daughters of retired or deceased employees also are eligible.

General Dynamics has participated in the National Merit Scholarship program since 1961, providing a maximum of 12 scholarships a year. Now, 41 sons and daughters are attending school on GD scholarships.

Entering college this fall on 1964 scholarships are: Thomas D. Crouch, son of Mr. and Mrs. Kenneth L. Crouch; Dean M. Sandin, son of Mr. and Mrs. Dean Sandin; Robert W. Franson, son of Mr. and Mrs. Wilfred R. Franson, all of GD/Astronautics.

Convair—Bryan C. Cheney, son of Mr. and Mrs. Harold K. Cheney.

Electric Boat—David Carl Erikson, son of Mr. and Mrs. Leslie C. Erikson.

Paul Raymond Cary, son of Mr. and Mrs. Raymond J. Cary Jr., now of GD/Pomona, formerly of GD/Electronics-San Diego.

Lesley M. Wilson, daughter of Mr. and Mrs. Leo E. Wilson, GD/Fort Worth.

General Atomic—Charles W. Loomis, son of Dr. and Mrs. Charles C. Loomis; Bruce Stewart, son of Dr. and Mrs. Hugh B. Stewart, General Atomic.

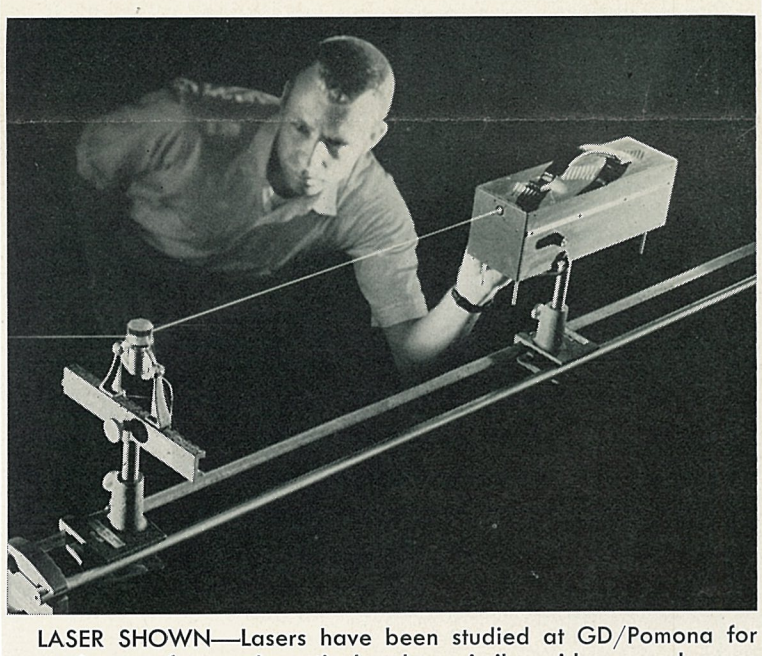
Lawrence J. Johnson, son of Mr. and Mrs. Roger L. Johnson; Christine Tubbs, daughter of Mr. and Mrs. Douglas C. Tubbs, of GD/Pomona.

GD/FW Men Elected To ASME Positions

W. L. Nix, Dept. 65-2, has been elected chairman of West Texas Chapter, American Society of Mechanical Engineers, for 1964-65.

Billy J. Pendley, Dept. 263-7, was voted secretary for the coming year.

Other GD/Fort Worth employees assuming new roles in the society include: J. I. Koger, Dept. 61-3, director; LeRoy E. Erwin, Dept. 86-0, RACON representative; Eliot E. Kerlin, Dept. 64-2, membership development; James E. McCann, Dept. 16, publicity; and L. D. Pendleton, Dept. 65-2, finance.



LASER SHOWN—Lasers have been studied at GD/Pomona for several years for use in optical radar, missile guidance and space communication. In an exhibit at Science USA during Los Angeles County Fair, Sept. 18-Oct. 4, GD/Pomona booth will illustrate laser use in bouncing phone conversations off moon. In photo, C. H. Parks of advanced techniques (Dept. 6), adjusts a laser beam prior to tests.

General Dynamics Reliability Panel to Hear NASA Speakers

General Dynamics Panel on Reliability will hear outstanding government officials define Department of Defense and National Aeronautics and Space Administration reliability requirements at the Corporate meeting this month in Washington, D.C.

J. Condon, NASA director of reliability and quality assurance, will speak on NASA's reliability and quality assurance requirements for research, development, and production at the first luncheon session Sept. 28, announced J. Y. McClure, GD director of reliability, quality control and value control.

Col. O. C. Griffith, deputy director-Office of Technical Data and Standardization Policy, will discuss DOD technical data and standardization program as Sept. 29 luncheon speaker.

Only other outside speaker at the three-day meet, which will bring together reliability representatives from GD divisions, is T. K. Jones of Boeing Aerospace Division whose subject will be "Redundance/Maintenance Cost Optimization for Manned Space Stations."

McClure will give a progress report on General Dynamics reliability efforts. Other GD men who will present various facets of reliability and quality activities from their respective divisions will be G. E. Owen and N. H. Simpson of GD/Fort Worth; P. I. Harr, E. S. Winlund, and W. E. Magnuson of Astronautics; G. M. Ellis, A. S. Freedman, J. C. Bear of GD/Pomona.

When telephoning, never mind the weather. Get to the point. Telephone time costs money.

Electronic Circuits Analyzed With New Computer System

A totally new tool became available this year to GD/Astronautics engineers, when members of the division's numerical analysis group (Dept. 595-0) teamed with IBM to introduce and extend a computerized method of electronic circuit analysis.

Known as ECAP (for Electronic Circuit Analysis Program), it affords wholly new capabilities through a user-oriented computer "language" which allows the engineer to set up his own circuit problems for solution.

ECAP was developed by the computer firm for use on its IBM 1620 machine. At GD/Astro, through the efforts of R. A. Elliott and Roger Moore of Dept. 595-0, in cooperation with IBM Representative Ralph Wilson, the digital program was adapted for use on the much faster IBM 7090.

ECAP has many uses, related variously to reliability studies, design checking and circuit "trouble shooting." It provides a thoroughness of analysis heretofore impossible, and achieves this with great speed and economy.

At present, the engineer may choose AC, DC or transient analysis of circuits.

Using a schematic diagram, the engineer sets up equivalent circuits for the active elements, using (basically) passive elements plus controlled current and voltage sources.

Circuit elements are conventionally designated (R, C, L, etc. —and even by part identification number, if desired), and any unit values may be used so long as this use is consistent. Each circuit is then broken down into numbered nodes and branches and listed, using a simple coding technique, as computer inputs.

At present ECAP method can handle a circuit of 20 nodes (plus zero reference) and 60 branches. Forthcoming improvements will expand this capability.

A typical analysis possible with the DC program involves a nominal solution with node, element and branch voltages, branch and element currents; partial derivatives and sensitivities; power losses; a "worst-case" solution; standard deviation; parameter variation.

Elliott and Moore have been working on the technique for about two years, and see still greater refinements and adaptation of the program in the near future.

Moore has developed an AC program which permits inclusion of transistors without the need for preparing equivalent circuits, and which will additionally plot response curves.

Elliott foresees complete circuit synthesis, as well as an up-coming adaptation to the technique to permit digital computer analysis of hydraulic and pneumatic systems.

In use since early this year, ECAP was applied to analysis of GD/Astro's SLV autopilot, and a program for Centaur electronics is forthcoming.

Speed and economy of ECAP are demonstrated in transient analysis of a seven node, 12 branch circuit, for example, which requires only one to two milli-hours of computer time.

To date, two classroom sessions have been conducted to familiarize GD/Astro engineering personnel with ECAP. Moore has invited those wishing to learn more about the program to contact him at GD/Astro main plant, ext. 2810.

NEW TOOL—R. A. Elliott, left, Roger Moore and Ralph Wilson, IBM representative, discuss ECAP (Electronic Circuit Analysis Program) with Dr. W. J. Schart, GD/Astro chief of numerical analysis. User-oriented computer method of analyzing electronic circuit is now available to GD/Astro engineering personnel.

PROUD MOMENT—Presentation of GD/Astro July Craftsmanship award last month to sheet metal and processing, Plant 19 (Dept. 714) was proud moment for employees whose efforts earned the hard-sought honor. Their enthusiasm (lower photo) is echoed on faces of Rex Grimes, General Foreman E. O. Johnson, and Joe Friel in top photo after plaque was presented by E. D. Bryant, right, vice president—operations.

Business Courses Will Help To Keep up With the Times

(Continued from Page 1)

educational services join forces with University of California Extension to set up a new series of business management courses.

For the first time University of California business systems management accredited courses will be given in-plant at both Astro and Convair if demand warrants. They will be open to all GD people, as well as to the general public.

Automated business methods are here to stay, and there is no way to escape, stress J. A. Croft and H. W. Rubottom who head up Astro and Convair educational services.

"These courses provide a practical and concrete means to keep up and even stay ahead of the explosively-developing business management field," they said as they urged all GD data processing, business system personnel, and others involved in any business function to increase their knowledge of modern concepts and methods.

J. H. Johnson, Astro director of management systems, and G. O. Withem, Convair chief of data processing, are backing the new program to the hilt. Both kicked off the program in separate meetings with their people and heads of departments at the two divisions.

A survey of interest is now under way to establish how many will enter the following basic and intermediate courses: Business Data Processing with Unit Record Systems, Introduction to Data Processing and Computer Programming, Electronic Data Processing Economics and Feasibility Studies, Systems and Procedures, Introductory Mathematical Analysis for Business, Business Communications, Problems in Human Relations.

Classes will meet from 5 to 7:30 p.m. at in-plant locations.

Tuition will range from $40 to $50 per course, however, tuition refunds are available to General Dynamics students.

Most of the credits earned from the courses may be applied toward Business Administration degrees and all who complete 24 units will receive Phase I Professional Designation certificates in Business Systems Management from the University. Advanced courses will be added later to lead to Phase II certificates.

Application forms and program brochures now are available at any educational services office at Convair Plant 1 and Astro Plant 71 and Plant 19. Registration deadline is Sept. 24, and admission charge is $10.

For detailed information call Wayne Turner at Convair educational services, ext. 491, Plant 1; or Warren Newton, Astro educational services, ext. 2213, Plant 71.

Jim Hardison Slated For Explorers Meet

GD/Convair's Jim Hardison, veteran leader of GD tours into Mexico, will be guest speaker at the 7:30 p.m., Sept. 16 meeting of ARA Explorers Club in ARA Clubhouse.

Hardison's program will include slides, movies and "south-of-the-border" folk music.

Another destination for this month's Explorers field trip originally slated to the cliff "geysers" at Puerto Bunda Bay, Baja California, is now under consideration by club officers. The "geyser" visit will be delayed until later.

Renz Wins Third Skate Championship

An Astro son, John Renz Jr., 19, whose father is in Dept. 250-1, last month won his third annual national roller skating championship (men's singles-free style) in competition at Louisville, Ky.

The 1964 win is another in a long string of victories for the younger Renz. Last November he copped the international title by pinning the first defeat in several years on West Germany's Karlheinz Losch **(GD/NEWS, Nov. 27, 1963).**

GD/ASTRO GROUP WINS INFORMATION AWARD

GD/Astronautics' technical data systems (Dept. 591-5) under Carl Dragila, chief, has been cited for an honorable mention award for records control and information systems by Systems Magazine, an electronic data processing publication.

GD/E LINKSMEN SET VALLE VERDE MATCH

GD/Electronics men will travel to Valle Verde Country Club for a GD/E Men's Golf Club tourney Saturday, Sept. 19. Tee-off time is scheduled for 8 a.m.

Sign Promptly For Big Bear

Bookings for General Dynamics Ice Skating Club's "Autumn Weekend at Big Bear Lake" are going fast, and GD/Astro, GD/Convair and GD/E employees wishing to take part in the weekend of fun are encouraged to sign up promptly.

The event is slated for Sept. 25, 26 and 27 at Big Bear's Wawona Lodge, where accommodations include hotel rooms with private bath for two to five persons, and housekeeping cabins for families.

For $12 per person (half-price for children under 8), weekenders receive two nights' lodging and most meals, including a Saturday evening barbecue. Transportation must be arranged on an individual basis.

Activities include swimming in the Lodge pool, an informal dance Saturday night, plus cycling, horseback riding, hiking, and of course, ice skating.

Reservations will be accepted at employee services offices at Plants 1, 71 and 19 with full fee payable at time of registration. Barbara, ext. 4041 at Plant 71 can provide more information.

288 Ties Spark Pistol Club Action

A score of 296 of 300 points earned first-place master class honors for Al Schindler in a recent .22 Police Course match fired by ARA Pistol Club.

Warren Ranscht and Don Smock placed second and third in this bracket with scores of 288, 12x and 11x respectively.

In expert class, Bill Dittmann led with 290, while 288 was again a "magic number" for Carl Jensen (11x) and John Bennett (8x). Bill Worthington (273) and Bill Winchell (259) led sharpshooters.

Standings in a companion Center Fire round placed Ralph Sanderlin in the lead with 272 (6x) over J. S. Knutson, 272 (2x). Schindler scored 269 and Ranscht, 266.

Next club matches will be held at 9:15 a.m., Sept. 13 at San Diego Police Pistol Range.

Adult Classes Open For Fall Semester

Fall semester classes for adults start next week (Sept. 14) at San Diego Evening High School, 12th and Russ Sts.

Standard high school courses are scheduled for those who wish to complete requirements. Review courses are offered in such subjects as reading, mathematics, typing. Specialized courses are given in vocational guidance and civil service review. Instruction in French, Italian, Russian, and Spanish is available.

Information and class schedules may be obtained by calling the school office, 233-7402.

Salvage Schedule Is Announced

GD/Convair's salvage yard will be open for employee sales this coming Saturday morning, Sept. 12.

Astro's salvage yard at the Kearny Mesa plant will be open the following Saturday (Sept. 19) from 8 a.m. to noon.

Navy Reserve 'Back to School'

Naval Reserve officers among General Dynamics employees in the San Diego area will go "back to school" this week, when a preliminary meeting of fall semester courses of Naval Reserve Officers School (NROS 11-2) is convened.

Designed to provide reserve personnel with instruction necessary to maintain and improve their professional capability, NROS courses range from specifically military subjects to those applicable to broad areas of business and technology.

Ross A. Evans (Cdr., USNR), manager of personnel administration at GD/Astro, is commanding officer. Other GD men serving in staff or faculty positions are Donald P. Germeraad (Capt. USNR), Gerald D. Schmidt (Col., USMCR), Richard G. Stoklosa (LCdr., USNR), Richard G. Wilson (Cdr., USNR), and Emory W. Thurston Jr. (LCdr., USNR), all of GD/Astro; and George T. Schnurer (Lt., USNR), of GD/General Atomic.

This semester, NROS offers 18 courses with classes meeting weekly at five locations throughout San Diego County.

Kickoff session will be held at 7 p.m. tomorrow (Sept. 10) in the auditorium (R-4) at U. S. Naval Training Center. Reserve officers have been invited to attend for purposes of counseling and registration, and should enter NTC via Gate 6.

S-C Facility Hosts Guests From Japan

Members of the Japan Management Association were guests last month for a one-day visit to GD/Stromberg-Carlson San Diego facility, with E. F. Carey Jr., assisted by Yoshiyaki Tamura of S-C, as host.

The agenda included presentations by C. V. Shannon, data products resident manager, and Paul Athan; service bureau demonstrations of the S-C 4020 computer-recorder and S-C 3070 electronic printer by Al Aron; plant tour featuring the S-C 1090 computer display console and S-C 4400 microfilm printer conducted by Ed Bates.

Included on the program was a presentation on electronic data processing as practiced at GD/Astronautics, given by Roger Reifel and W. F. MacDonald of GD/Astro Dept. 591-5.

UAIDE Meeting Hears GD Men

General Dynamics people from Astronautics, Stromberg-Carlson, and General Atomic delivered papers at the 1964 annual UAIDE meeting in Los Angeles, Aug. 12-14.

K. Leon Montgomery of GD/Astro, outgoing secretary of the organization for Users of Automatic Information Display Equipment, was moderator of the Stromberg-Carlson panel discussion on product development, which followed a discussion of S-C 4400, new commercial microfilm printer, by S-C's H. W. Holmerud.

Panel members, all from S-C data products at San Diego, were Holmerud, Ed Bates, Bert Frawley, Jake Konen, Si Viejo, Ed Wright.

Mary Lee Skinner of General Atomic spoke on "Applications of the S-C 4020 Plotter to High Energy Fluid Dynamics Calculations," at the Aug. 13 session. Topic of Robert C. Foster of S-C was "Multi-Level Logic Display." Richard F. Klawa, GD/Astro, gave a paper on "Processing and Display Research of Tiros Satellite Data," and Thomas B. Packard of S-C talked on "VCPS, Character Plotter and Column Printer."

H. E. Pietsch of GD/Astro served as UAIDE president during the last year.

Shooter Pool Grows For Coming Contests

Don Estes of Lakeside came close, but not quite close enough, to taking home the pot at CRA Gun Club's Troy trapshoot Aug. 23.

The one bird Estes dropped in handicap competition cost him $257.50.

Softening the blow a little, his 49—25 straight in 16-yd. and 24 in handicap—is the record for a Troy shoot. Estes got $12.50 for his prowess, $8.25 as high scorer of the day and half the $8.50 prize money for 16-yd., when he and Don Jones of San Diego both went 25 straight.

Shooters at the next Troy event Sept. 27 will be aiming at $178.75, now in the pool for combined perfect record, and $78.75 for handicap, plus fees for that day.

Other coming Gun Club events, open to the public, are a registered skeet shoot on Sept. 20 and a night registered ATA trapshoot on Wednesday (Sept. 23).

Fishermen Slate Meeting Sept. 23

ARA Fishing Club has postponed its meeting scheduled Sept. 2 until Sept. 23, 7:30 p.m., in ARA Clubhouse.

At that session, a Salton Sea trip on the agenda for October will be discussed, and awards will go to members landing the largest catches during July and August.

TRAVELERS—General Dynamics group which returned Sunday from two-week ARA-CRA tour of Old Mexico by train, shot before departure from Mexicali Aug. 21. This is fourth Mexican trip conducted for GD folk by Jim Hardison of GD/Convair, far left in photo.

Sports & Recreation

FOR WINNERS—Carole de la Isla, Dept. 141-2, displays huge trophy to go to over-all winners of ARA Sports Car Club "La Separateur" rally Sept. 13. Trophies in background go to second and third place overall, first place team, and best of marque.

Astro Sports Car Fans Brace For 'La Separateur' on Sept. 13

This Sunday (Sept. 13) will find hardier members of the "sports car set" setting off across country in ARA Sports Car Club's Euorpean-style rally, "La Separateur."

Entries are still being accepted, and application blanks are available at all employee services outlets, most area sports car dealers, and from members of the ARA group.

Jack Gallant, club president, explained that "La Separateur" differs from usual "fun" and championship rallys, in that route instructions used are extremely simple and limited in number.

The route will be a grueling one, and participants will be provided with an advance map of the course, permitting them to pre-run it prior to the rally.

Entry fee is $5 per car, and all cars entered must be equipped with seat belts.

Additional information on the event is available from Gallant, Plant 71, ext. 2028, or Dennis Scannell, rallymaster, Plant 71, exts. 1361 or 2932.

ARA Calendar

(GD/Astronautics Recreation Association has some 40 activities in operation for employees. For information, call ARA Headquarters, ext. 1111.)

★ ★ ★

AMATEUR RADIO — Meeting today (Sept. 9), 7:30 p.m., ARA Clubhouse. Topic: The mystery transmitter.

ASTRO NAUTS — Beginners' square dance class open to new participants Sept. 15 (7:30 p.m.), Sept. 22 and 29 (8 p.m.), ARA Clubhouse.

ASTRO NOTES—Season kick-off meeting and rehearsal, 7:30 p.m., Sept. 14, ARA Clubhouse.

BALLROOM DANCING—Intermediate class opens Sept. 21. Interested intermediates or beginners advise (by AVO) L. F. Moeller, mail zone 191-00.

BIG BEAR TRIP — Weekend at Wawona Lodge, Sept. 25-27. $12 per person. Sign up at employee services offices.

FLAG FOOTBALL — Registration deadline Sept. 11 with season to open Sept. 21. Information, ext. 1111.

GUN CLUB — Open registered skeet shoot, Sept. 20; registered ATA trapshoot, Sept. 23 (night); Troy trapshoot, Sept. 27. Gillespie Field.

SPORTS CAR — "La Separateur" rally, Sept. 13. Entry fee $5. Applications at employee services outlets.

TEEN CLUB — "Triple feature" dance with headline entertainers, 8-11:30 p.m., Sept. 19, ARA Clubhouse.

Registration Deadline Near For Football

This Friday (Sept. 11) is final day to sign up for this year's flag football program.

Plant leagues are now being organized and a game schedule will be issued in time for play to start Sept. 21.

Complete information on flag football is available through ARA Headquarters, ext. 1111.

'Wine Cookery' Set For Wives Meeting

Astro Wives Club will hold its next luncheon meeting Sept. 16 at the Bahia, featuring a program, "Cooking with Wine," presented by Charles Griffith.

Hostesses are Mmes. Kenneth Morefield and Daniel Nordeck.

Reservations should be phoned to Mrs. Richard Besse, 274-0512 or 273-2757 before 5 p.m., Sept. 14.

On Sept. 13 the group will hold a potluck luncheon in ARA Clubhouse, to which all wives of GD/Astro employees and their guests have been invited.

Money-Saving Coupons Ease Budget For Fun

Money-saving exchange coupons for family entertainment events from baseball to movies to roller skating are now available to GD/Astro employees through employee services outlets.

Popular Disneyland "Magic Kingdom" cards permit employees to purchase ticket books at discount rates; a coupon for San Diego's own Sea World trims 50 cents from the regular admission prices.

For athletic events, employee services has coupons offering 75 cents off on admission to the Padre-Tacoma baseball game, 8 p.m., Sept. 12 at Westgate Park, and 20 to 30 cents off on tickets to the Shrine charity football game (Cal Western vs. University of Hawaii), Sept. 19.

With exchange coupons, employees save $1 on ocean fishing trips from Mission Bay Sportsfishing or Seaforth Landing.

A 59 cent price reduction is offered with coupons for the movie "Becket," at Capri Theater (Sunday through Thursday evenings and matinees), and employees are eligible for special discount passes which save 30 per cent on Starlight musical tickets.

Skateland, Front and G streets, will honor IRC coupons for roller skating, 6:30 to 9:30 p.m., Monday, Sept. 21.

Bowlers Organize In Winter Leagues

Organizational meetings for all ARA-sponsored winter bowling leagues are being held this week with action slated to begin on all fronts next week.

Leagues are slated for: Parkway Bowl, a Tuesday mixed loop; Clairemont Bowl, mixed leagues on Tuesday and Friday and men's scratch leagues on Tuesday and Friday; La Mesa Bowl, mixed leagues on Tuesday and Wednesday; and Pacific Beach Bowl, a Thursday mixed league.

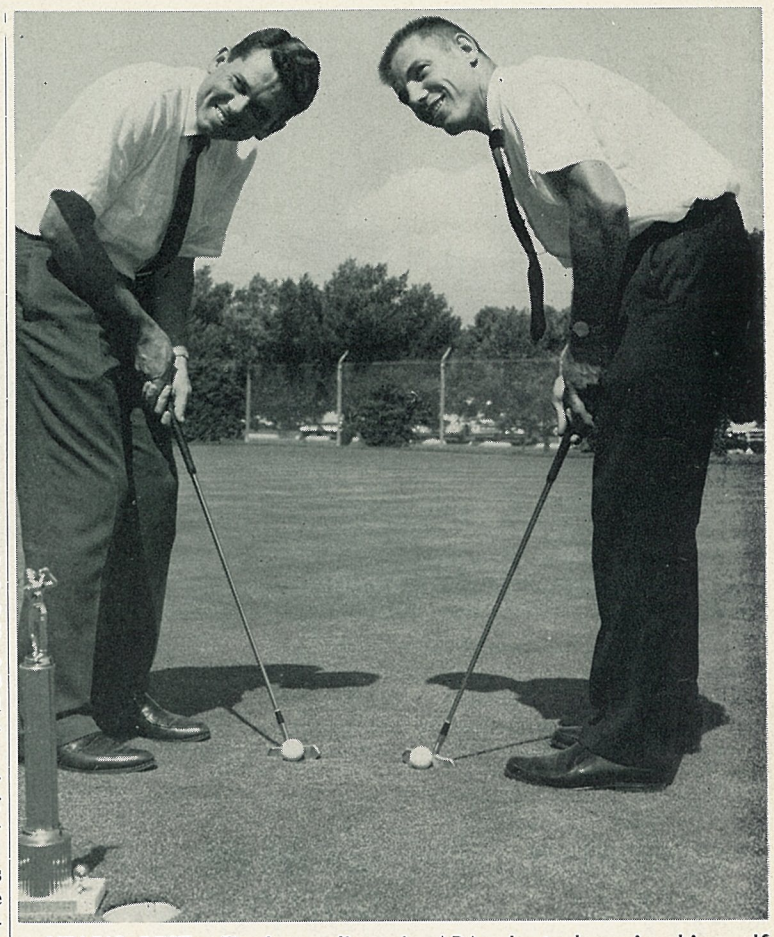
Organizational meetings are being held at 6:15 p.m. nightly this week at locations where leagues will operate and on the nights they are scheduled. Teams or individuals may still enter by attending these meetings.

Those interested in Tuesday leagues as well as those who failed to enter earlier may contact Commissioner Forest Erwin at ext. 1389.

LONG BEACH TEAM WILL FACE SAN DIEGO SABRES

San Diego Sabres, semi-pro football club which includes several GD/Astro employees among its membership, will meet a Long Beach team at 2 p.m., Sept. 13 in University of San Diego stadium. Admission, at the gate, is $1.50.

DANCERS—Some of participants in modern jazz dance class meeting Saturdays, 10-11:30 a.m. in ARA Clubhouse display skills. From left are Debbie Heist, Audrey Rote, Instructor Sheila Mariam, Bonnie Berquist, Mary Rote. Employees or dependents interested in the program can obtain more information from Mrs. Rote, 277-2542.



YEAR'S BEST—Final standings in ARA plant championship golf tourney found Wayne Pence, Dept. 376-1, left, and Ken Crotz, Dept. 835-5, lined up for winner's trophy. Crotz captured plant title in match play contest which ended Aug. 23 at Carlton Oaks.

ARA Astro Nauts Open Ranks As New Class Series Begins

It will be "square 'em up" for fall and winter fun this month as the ARA Astro Nauts open their ranks for new members in the form of a new beginners' class.

Opening session will be Sept. 15 with registration at 7:30 p.m. and lessons at 8 p.m. The class will remain open Sept. 22 and 29. After that time, no new members will be allowed until the next beginners' sessions in the spring.

More than 900 persons have graduated from ARA-sponsored square dance sessions over the past years. Each new class takes the dancer from simple walk-throughs of square dance maneuvers to the more fancy steps that make it so popular.

Instructors for the upcoming sessions are Dot and Van Vander-Walker, a popular couple that has taught all ARA classes.

Cost per person is a nominal 50 cents per week for each of the 20 weeks included in the program of instructions. Once each month is "party night" with guest callers, more experienced dancers, etc., to add flavor to the program.

While square dancing is primarily a couple activity, singles will be accepted in equal numbers. Those who have never danced before or those who have dropped out of previous classes are invited.

Astro Players Hold Regular Workshops

A drama workshop, being held each Wednesday during September by ARA Astro Players, remains open to interested participants.

The workshop is designed to give beginners or those who have been out of theater work for some time an insight into modern production, acting and staging techniques.

For instance, the session tonight (Sept. 9) covers stage makeup. On Sept. 16 comes the "do's and don'ts" of stage production including a one act play in which the cast will break many of the accepted rules to allow critiques later. Sept. 23 will feature lighting for stage productions.

Each session begins at 7:30 p.m. at ARA Clubhouse and is open to all who care to participate.

Instruction Offered By ARA Golf Club

Thirty Astro folk will have an opportunity to learn golf or improve their games by taking part in lesson series offered by ARA Golf Club.

A women's and men's class will be formed, limited to 15 persons each, starting Sept. 29 and Oct. 1 respectively. Women's instruction will be held Tuesdays, 10:30 to 11:30 a.m., with the men's class convening Thursdays, 8-9 p.m., both at Mission Bay.

Instructor will be Jim Moller, MB pro. The series of 10 weekly lessons costs $14 (including a large bucket of balls each week), with registrations (with full payment) now being accepted at employee services offices at Plant 19 and 71.

'TRIPLE FEATURE' SET FOR TEEN CLUB DANCE

"Triple feature" entertainment will highlight ARA Teen Age Club's forthcoming dance, 8 to 11:30 p.m., Sept. 19 in ARA Clubhouse.

On the agenda are appearances by Paul Williams (who recently recorded "Summertime Love"); "The Chancellors" group; and "The Legendaires," a bop singing aggregation which recently signed a seven year recording contract.

Members with dates may invite a guest couple, while members attending "solo" may invite one guest. Admission is 50 cents for members; 75 cents for guests.

Commissioner John Hess has announced outstanding attractions for dances during fall months. Featured will be such groups as "The Safaris," "Lee and The Crowns," "The Penguins," etc.

ARA Schedules Bus Trip to Las Vegas

Another ARA-sponsored weekend in Las Vegas is in the offing for GD/Astro employees and their families Oct. 9 and 10.

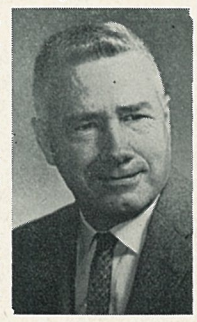
Tickets for the event are now available at employee services outlets at $25 per person, which includes round-trip transportation by chartered bus, and two nights' lodging (double occupancy) at the Flamingo Hotel.

Buses will leave from in front of ARA Clubhouse at 5:15 p.m., Oct. 9, returning Sunday afternoon.

COMMUNICATORS CONFER — GD/Convair division president, J. H. Famme (standing), welcomes some 30 communications specialists from General Dynamics divisions to San Diego where they gathered Aug. 11-13 for second Corporate conference on mutual problems and objectives. Seated at Famme's right are R. E. Bennis, GD manager of wire communications, and C. M. Barlow, director of administrative services. In far right foreground is R. I. Morse, West Coast communications coordinator.

Keach Rejoins Dynamics In Procurement Post

CHARLES G. KEACH, formerly procurement manager at GD/Astronautics, has rejoined General Dynamics, this time in Corporate Headquarters, New York City, reporting to Max Golden, vice president.



C. G. Keach

He will coordinate division procurement practices.

Educated at UCLA and University of Southern California, Keach was with Northrop Aircraft Co. for 17 years, eventually as chief purchasing agent. He joined Astronautics in 1959 and returned to Northrop in 1962.

ERNEST F. HAFEMEISTER has joined the staff of the International Department at Corporate Headquarters as manager of telecommunications sales-international, reporting to C. Anthony Chapman. A World War II Signal Corps officer, Hafemeister until recently was director of marketing, telecommunications for IT&T.

WILLIAM LASHBROOK, formerly North American Aviation, Inc. chief of proposals and contracts Apollo, has joined General Dynamics as a member of the Corporate pricing staff, reporting to Glenn Keach. He was previously with Ford Motor Co.

JOHN KUDA has joined Corporate Headquarters as a cost analyst, William T. Lake, comptroller, announced.

A graduate of University of Connecticut with MBA from Wayne State University, Kuda was formerly controller for C. J. Bates & Son, and has been with Curtiss-Wright and Ford Motor Co. He was a WW II infantry officer in the ETO, several times decorated.

KARL MEYER, formerly of Electric Boat systems and procedures, has transferred to Corporate Headquarters, reporting to Robert E. Bennis, manager of wire communications. Meyer is a graduate of Massachusetts Maritime Academy and Harvard School of Business.

DANIEL IGO, formerly chief patent counsel for Scott Paper Co., has been named patent counsel in Corporate Headquarters, reporting to Roger Harris, vice president and general counsel.

A 1937 graduate of Pennsylvania State (BA, physics-chemistry) with LLB from Georgetown University, Igo has engaged in private practice and previous to joining Scott Paper was general counsel for Lukens Steel Co.

* * *

Patented Mill Shaves F-111 Honeycomb Parts

A milling machine that shaves off aluminum honeycomb core like a popular electric razor and another that gives "flat tops" are among the devices used to carve out F-111 air foil configurations.

Such ingenious and unique techniques are dictated by the large number of unusually shaped F-111 honeycomb bonded assemblies — including tapered, curved, slanted, rounded, and variations of all these.

"We used a lot of honeycomb panels on the B-58," explained D. O. Burch, Dept. 31 general foreman, "but the Hustler's honeycomb parts weren't nearly as complex as the F-111's."

H. E. Spencer and H. R. Cook, manufacturing research engineers, teamed with tooling personnel to develop the company's newly patented Air Foil Mill—the "razor."

It consists of a steel drum about eight feet in length and 10 inches in diameter. The drum has settings for 201 cutters. Each of the cutters — called "bologna slicers"—is 1½ inches in diameter, and each is rotated by a small air motor, which feeds off air pressure blown through the steel drum.

The honeycomb part to be milled is placed under the drum cutter on a fixture. It is guided under the cutter at about an inch a minute by a remotely controlled, push-button console. "Route" of the cutters is determined by two cams on either end of the mill fixture. As wheels on either end of the steel drum roll over the shaped cam, the cutters whittle away at 20,000 rpm—about 200 turns a second!

Actually, there are eight rows of cutters around the drum. Each row is staggered, so that each row of cutters overlaps the other. Result is a 100 per cent complete cutting pattern, with the machine making a straight-line cut across the honeycomb core in a single rotation of the drum.

The Air Foil Mill cuts in "straight-line" fashion. This means that the core can be contoured in virtually any manner, but only in one direction—laterally.

Other F-111 aluminum honeycomb cores are even more intricately shaped. Some, for example, require contour in both directions — longitudinally and laterally—with variations either way. The effect, in some instances, is like the topography of a rolling countryside.

Manufacturing engineers at GD/Fort Worth solved this problem by improvising on a standard Rockford conventional open-side planer. The solution was offered by a "tracer" device, attached to and synchronized with the planer's cutter.

To mill the part, a pattern identical to the honeycomb part is placed on a fixture next to the part. As a disc-shaped tracer head moves up and down the surface of the adjacent form, the planer's cutter makes identical movements — and cuts — on the honeycomb core block. It moves at a pre-set rate, depending on severity of contours.

Formerly, honeycomb cores requiring this sort of complex cut had to be filled with plastic and machined on conventional duplicator-type machine tools at slow cutting rates.

Still other intricately shaped air-control panels for the F-111 necessitated even more new machines—namely for conical and circular-shaped pieces.

In these cases, engineers modified a conventional traversing plate saw by adding a vertical router motor which uses a three-inch cutter. The machine can cut pieces up to nine feet long and six inches in diameter.

Pneumatically driven, the cutter skims across the top of the honeycomb at a precisely regulated speed. Thus the operations was tagged "flat top."

Size and shape of the honeycomb core is determined by cams located on either end of the honeycomb core.

With all this superb new machinery, some hand work is still required on most pieces that emerge from Dept. 31's full-depth honeycomb core section.

Skilled technicians use small hand-cutters to route out small indentures and cut along edges where reinforced skin is to be placed.

CURRY TO ADDRESS FORT WORTH NAA

R. P. Curry, manager of FW business center, will speak to Fort Worth Chapter, National Association of Accountants, Sept. 17 at Worth Hotel, on "Data Processing—What to Expect in the Next 10 Years."

D. K. Hall Tel-4 Rep At Cape Kennedy

D. K. Hall, Convair senior design engineer, is now in residence in the Cape Kennedy area as the division's first technical representative for the TEL-4 program.

The GD/Convair office is located on Merritt Island, Fla., in the TEL-4 building, site of the telemetry receiving and recording station to support and monitor Air Force launch operations. Convair is providing and integrating advanced telemetry instrumentation under a contract from Pan American World Airways, Inc.

Within the next few months around 40 Convair technicians, assemblers, installers and 15 engineers will be based at Merritt Island.

GD/E Equipment Shown at Dayton

GD/Electronics-San Diego is exhibiting two of its major products at Aerospace Systems Division, Wright-Patterson AFB, Dayton, Ohio, throughout September.

On display are GD/E's Terrain Following Radar, a compact system which allows aircraft to fly safely at pre-selected altitudes over any terrain in zero visibility, and the Aircraft Station Keeper (ASK), a radar system which enables aircraft to fly close formation under low visibility conditions.

Famme Attends Navy Review

J. H. Famme, GD/Convair division president, was guest of honor at ceremonies marking the 122nd anniversary of the Navy Medical Corps on Aug. 28 at the San Diego Navy Training Center. Famme was in the stand with Capt. Ralph Volk, the Center's senior medical officer, reviewing officer at the Recruit Brigade Review, and presented awards to honor recruits.

* * *

People Mobility

Interdivisional Transfers

(Following are recent personnel transfers among General Dynamics divisions. In parentheses are dates when individuals joined the company.)

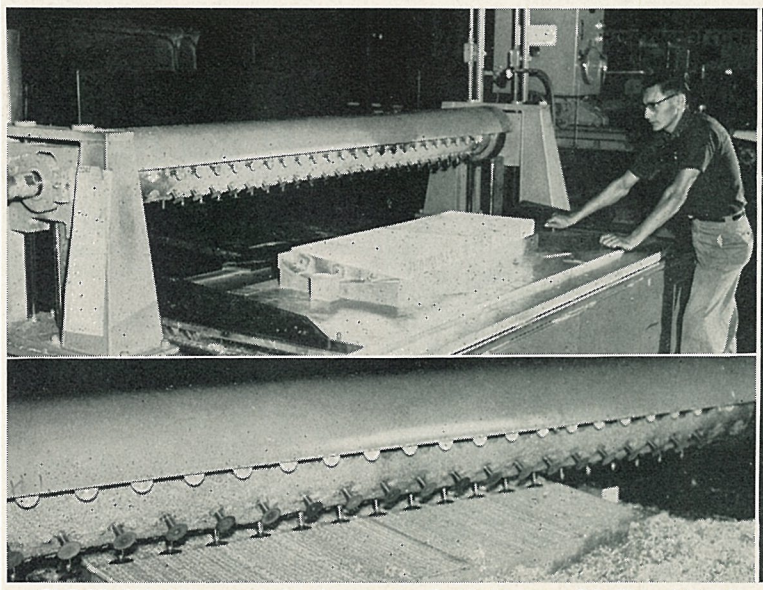
JOHN E. JOHNSON (1956) from GD/Convair to engineering, Electric Boat; **ROBERT L. HAYES** (1956) from GD/Astro to Convair logistics support; **WILLIAM E. HOFFMAN** (1956) from Astro to Fort Worth manufacturing control; **PAUL B. LONG** (1954) from Astro to Fort Worth general purchasing; **ARMISTEAD WHARTON** (1947) from Stromberg-Carlson to GD/Electronics-Rochester.

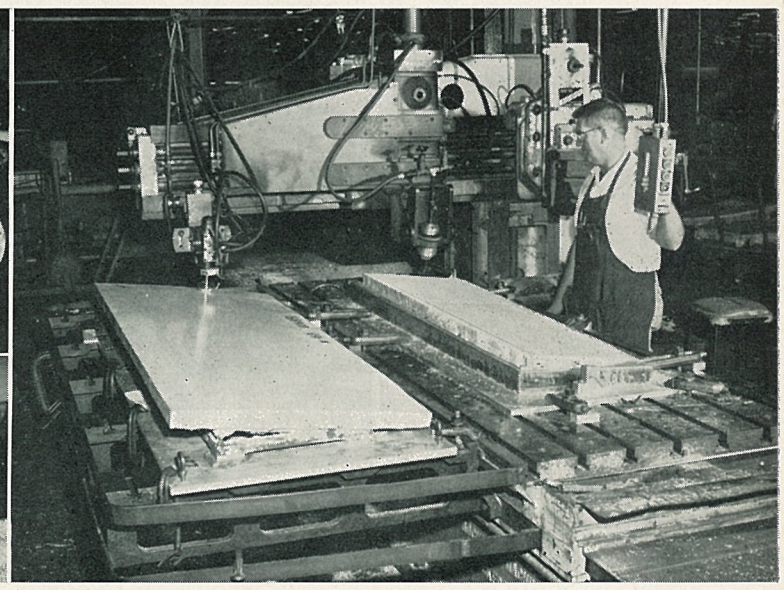
CHESTER L. GUERRY JR. (1951) from Astro to support equipment design, Fort Worth; **WESLEY F. DOBBINS JR.** (1959) from Astro (Roswell) to Fort Worth systems technology; **V. MILLMAN** (1954) from Convair to General Atomic; **MARTIN MOORE** (1960) from Astro (Roswell) to Fort Worth systems technology; **RODNEY W. STREED** (1948) from Astro to Convair development project engineer; **ALBERT S. FREEDMAN JR.** (1962) from GD/Electronics-San Diego to Pomona reliability group engineer.

ROBERT S. DONALDSON (1960) from Astro (Abilene) to Fort Worth subcontract management; **D. A. DOERING** (1957) from Convair to General Atomic; **DENVER L. YOUNG** (1952) from Convair to Fort Worth maintenance engineering; **MONSITA E. FRANCIS** (1953) from Corporate (Sacramento field office) to Fort Worth subcontract management.

F. M. GRABER (1956) from Convair to General Atomic; **CLIFFORD D. GEER** (1946) from Astro to Fort Worth factory management; **THOMAS O. RIEBER** (1956) from Astro to Fort Worth purchasing; **ROBERT F. STEPHENS** (1950) from Astro to Fort Worth procurement planning and control.

RUSSELL K. BROSCIOUS JR. (1963) from Astro to structures engineer, Convair; **ROBERT E. BOYKIN** (1964) from Astro (Abilene) to planning and controls, Fort Worth; **ERNEST A. SCOGGINS** (1949) from Astro (Vandenberg) to Fort Worth project coordination; **A. L. HOLTON** (1952) from Convair to F-111 tests, Fort Worth.





CLOSE SHAVE—At left above, A. C. Valtierra, GD/Fort Worth Dept. 31 mill machine operator, readies honeycomb core under precision cutters of Air Foil Mill, used to make straight-element line cuts. In close-up below left, 1½-inch diameter cutters whittle away at core, revolving 200 times a second. In photo at right, tracer moves over form shaped like airplane part while cutter at right makes identical movement and cuts honeycomb core block. Operator is Don Keel.

GD

ASTRONAUTICS EDITION

GENERAL DYNAMICS NEWS

Vol. 17, No. 20 PUBLISHED BY GENERAL DYNAMICS CORPORATION Wednesday, September 23, 1964

COORDINATORS — Corporate "Pot-of-Gold" committee made western swing recently to continue division conferences on techniques. Chairman is H. K. Pedersen, Corporate treasurer, seated right, with John Milling, Convair controller. Standing, from left: John Scott, Fort Worth; W. T. Lake, Corporate comptroller; R. D. Webster, Pomona; J. N. Sowers, Corporate cost analyst; G. W. Zahrte, Convair.

'Pot-of-Gold' Program Seeks Best Use of Cash

A Corporation-wide "Pot-of-Gold" program, aimed at more efficient use of working capital, is under way at all divisions of General Dynamics.

John Sargent

During the last two weeks a Corporate committee, named by John A. Sargent, Corporate vice president-finance, and headed by H. K. Pedersen, Corporate treasurer, has visited a number of divisions to discuss techniques and systems of interchanging ideas among divisions.

Other members of the committee include William T. Lake, Corporate comptroller; W. T. Alvis of Fort Worth division, contract administration; R. D. Webster, of Pomona division, procurement; G. W. Zahrte of Convair, material control.

The committee visited Convair, General Atomic, Astronautics and Pomona divisions earlier this month and expected to hold similar meetings at Electro Dynamic, Canadair, Electronics and Stromberg-Carlson at Rochester, and Electric Boat, with a review of accomplishments scheduled for Fort Worth.

"The fundamental long term objective of this program is to make sure that we are obtaining the most effective possible use of the financial resources that are entrusted to this management by our stockholders," Sargent explained in announcing the program to division presidents.

By improving the use of working capital in the normal course of business within the divisions, funds can be released for use elsewhere, such as the further liquidation of long term obligations and for expansion and growth.

Coordinators have been appointed at all divisions, in most cases the division controller, and targets are being set.

"Achievement of maximum turnover of liquid resources requires the day to day attention of every operating executive," Sargent commented, "starting with the general manager and including contract administration, purchasing, manufacturing, financial, engineering and production planning departments. It requires an industrial engineering approach to determine the ideal conditions to make the most of our 'Pot-of-Gold'—our bank deposits.

"This cannot be a 'one shot' effort but must become a 'way of life' that is just as important to our success as a company as

(Continued on Page 3)

Efforts at Cost Reduction Pay Off During First Half '64

During the first half of 1964, General Dynamics' Cost Reduction/Profit Improvement program has identified substantial "lifetime" savings based on 1,776 specific cost reduction items, Max Golden, Corporate vice president, reported this week.

Max Golden

Savings will be shared, with approximately 75 per cent going to the customer.

Savings are broken down into six categories: value control (required function at lowest possible cost); procurement cost improvement (lowest sound price for only what is needed); employee suggestion/cost improvement proposals; resources economics/conservation (resource cost reduction and waste prevention); management improvement (overall operations); productivity improvement (optimize labor utilization).

In a summary of division efforts during the first six months of this year the largest dollar saving was accomplished in the management improvement category, which accounted for 39 per cent of the program's savings. Value control was next in dollar accomplishment with 24 per cent.

(Continued on Page 3)

Three GD Men Help Save Life Of Electrician

CAPE KENNEDY — Swift action on the part of a trio of GD/Astronautics men here helped save the life of an electrician in a recent mishap.

They are Dick Morton, Tom Morgan and Harry Dutcher, all of Dept. 979.

The incident occurred in the ramp area of Complex 36-B, deep within a manhole area through which electrical and electronic cables pass. Involved was a Fluor Corp. electrician who was moving a cable when a short circuit occurred, followed by billowing smoke. The electrician was overcome before he could scramble up a ladder.

Morton entered the manhole, climbed down, made a quick check to determine the man was not lying on "hot" wires, then began moving him toward the ladder. Morgan and Dutcher joined him and hoisted the man to waiting hands above.

Although taken to the base hospital and treated for smoke inhalation, the trio was not seriously affected.

Among the letters of commendation each received was one from Astro President J. R. Dempsey.

Dempsey lauded the men for their personal courage, keen insight and selfless, exemplary action in the rescue. "We are all extremely proud of you," he added.

University Faculty Includes Astro Men And AF Representative

Nine GD/Astronautics men and one member of the Air Force Plant Representative's Office at Astro are among the 100 faculty members teaching University of California Extension courses this fall.

They will handle evening classses.

Astro instructors include Raymond A. Elliott, James F. Haskins, Cyril H. Nute, Douglas L. Platt, Dr. Theodore Rubin, Robert W. Swanson, Dr. Allan N. Wilson, Bruno F. W. Witte and Arthur T. Wood. Representing the AFPR is Frank H. King.

Class sessions began this week.

Value Improvement Certificates Given

An audited total saving of $696,000 has been reported as the third-quarter achievement of the GD/Astronautics operations department (less material operations) through participation in Astro's value control program.

Certificates citing implemented Value Improvement Projects have been presented to department personnel, including H. J. Sumner who is credited with the "one-write" shop planning system and savings of $506,000.

Other certificate recipients include E. B. Stevens, Dept. 452, two awards; H. J. Hawthorne, Dept. 758; B. V. Brown, Dept. 406; E. W. McPherson, Dept. 758; Andy Corrao, Dept. 758; D. R. Brinks, Dept. 756; R. H. Stringer, Dept. 780; D. M. Carlton, Dept. 403; S. J. Webster, Dept. 835-2; George Woodward, Dept. 780; J. E. Merk, Dept. 758.

Con-Trib's Drive Set For October

October at Astronautics will be devoted to a month-long campaign on behalf of GD/Astro Employees' Con-Trib-Club.

Drive objective is two-fold: first, to urge as many employees as possible to utilize Con-Trib-Club as a means of fulfilling their charitable obligations; and second, to encourage Con-Trib members to do their "Fair Share" by pledging four minutes' pay per day for the betterment of their community.

President J. R. Dempsey will serve as campaign chairman.

Campaign solicitors have been appointed in all departments, and shortly after Oct. 1, all employees will receive a "tab" card on which to indicate their response to the appeal.

Before signing the card and returning it to his departmental solicitor, each employee will be asked to select one of three options.

First choice is to authorize Astro to deduct a "Fair Share" from each paycheck. This option has the advantage of permitting each employee to contribute equitably, according to earnings; permits automatic modification of the donation if earnings change; and will eliminate the need for yearly C-T-C sign-up.

Second option is to elect C-T-C membership by specifying a fixed amount to be deducted from paychecks. This may be as little as 30 cents per week for hourly employees, or 60 cents per pay period for salaried personnel.

Or, of course, employees may choose not to join Con-Trib-Club at all.

Con-Trib-Club is a means by which GD/Astro employees unite in a common charitable effort by authorizing small but regular deductions from each paycheck. The sum of these many gifts represents a tremendous "doing power," administered by the C-T-C Board of Directors (comprised of representatives of labor unions, Management Club and the company).

Ten per cent of annual C-T-C receipts is channeled back to Astro employees. This is Con-Trib's Emergency Aid Fund, earmarked to aid employees who are faced with financial emergencies which cannot be met by normal means. Emergency Aid grants are outright gifts: they need not—cannot—be repaid.

A major portion of the annual C-T-C budget goes to United Community Services — the great "once-for-all" fund which provides support for 79 San Diego area charities and service organizations.

Then there are disbursements to dozens of other charities not represented in UCS, but which Con-Trib-Club's Board has investigated and considers worthy of aid.

Progress of the current campaign will be indicated throughout October on a big C-T-C "thermometer" to be erected on the east tower of Bldg. 3. Departmental performance will be charted on posters to be displayed regularly on bulletin boards throughout GD/Astro facilities.

SAVINGS TEAM—Supervisory personnel of graphic reproduction worked as team to achieve major savings for communication department in GD/Astro cost reduction program. From left are R. G. Lykins, Pete Holley, D. R. Pierce, W. R. Anderson, W. M. Jessup, D. L. Dagley, C. J. Taylor, Manager M. A. Young. Not shown is R. L. Hall.

Graphic Reproduction Is Leader In Communication Dept. Savings

An even dozen Cost Reduction Projects with audited savings totalling $797,266 on firm and likely potential business have been implemented thus far in 1964 within GD/Astronautics units (Dept. 120-128) reporting to C. T. Newton, director of communication.

Certificates of recognition were presented last week to originators of the money-saving ideas, as the department topped the year's savings target it had set for itself as part of the division-wide cost reduction program.

Largest single saving was realized within graphic reproduction (Dept. 123) by Manager M. A. Young, who established a seven-point program to increase productivity within his group. Hard savings totalled $574,504!

Young's project included centralization of responsibility for certain tasks, rearrangement of work areas, improved scheduling methods, and greater emphasis on individual operator instruction and check-back on operator performance.

Three other major projects also originated in graphic reproduction.

R. G. Lykins, assistant supervisor, implemented use of the photo direct method for high quality reproduction in lieu of the previous negative-plate technique, saving $70,713; then, in another project, saved $20,915 through modification of the printing methods used for Centaur reports.

C. J. Taylor implemented installation of an automatic folder for shop- and book-folding am-

(Continued on Page 2)

Performance to Determine Fee In $6 Million SLV Contract

General Dynamics/Astronautics has received a new $6 million Air Force contract for additional standardized Atlas space launch vehicles.

This contract, a cost-incentive fee agreement, provides for rewards or penalties depending on performance of the Astronautics division in production, delivery and flight of the Atlases. Performance to targeted cost, schedule and flight reliability standards determines the amount of profit or fee to be earned.

For each successful flight, Astro would receive a $25,000 bonus. For each flight that fails, a $50,000 penalty will be assessed. If delivery schedules are not met, a penalty of $600 per day per vehicle is charged.

Experience data accumulated for the past 20 months under an original contract for standardized Atlas space launch vehicles (35 vehicles) has been used to establish rating criteria.

Vehicles produced under the new contract will be utilized to launch lunar orbiter spacecraft to take closeup photos of the moon's surface, as well as Orbiting Astronomical Observatory (OAO) spacecraft and Orbiting Geophysical Observatory (OGO) spacecraft. All are programs of National Aeronautics and Space Administration.

Log Book Entries

Service Emblems

Service emblems due during the period Sept. 16 through Sept. 30.

Twenty-five-year: Dept. 403-1, G. P. Collins; Dept. 731-0, R. W. Calvert.

Twenty-year: Dept. 250-2, Frank Jenkins; Dept. 525-1, L. V. LeMaire; Dept. 715-0, H. L. McDowell; Dept. 759-0, C. H. Schneewind; Dept. 967-3, M. L. Johnson.

Fifteen-year: Dept. 123-0, A. C. Marshall; Dept. 142-2, I. D. Hopkins; Dept. 261-4, J. X. Mulvey; Dept. 403-3, C. E. Adams; Dept. 404-1, L. E. Crossley; Dept. 422-2, R. T. Crossman; Dept. 585-0, Maxine R. Binion; Dept. 591-5, J. N. Murray; Dept. 756-0, George Grande; Dept. 832, Leah B. Brunton, Alice N. Peck; Dept. 835-5, R. L. Kellogg.

Ten-year: Dept. 035-3, B. R. Zillgitt; Dept. 124-0, W. K. Woods; Dept. 142-4, J. E. Vondracek; Dept. 145-3, Sigmund Mucha; Dept. 170-1, J. L. Reich; Dept. 190-0, Gertrude L. Tonelli; Dept. 250-2, V. P. Arnold; Dept. 310-0, Ellen B. Weight; Dept. 336-1, J. D. Hamilton; Dept. 512-2, D. R. Lukens; Dept. 522-6, K. H. Brooker; Dept. 526-6, Dorothy J. Clute; Dept. 643-0, Nadine R. Palazzola; Dept. 663-7, E. I. Stuchly; Dept. 684-4, R. R. Whittemore; Dept. 691-1, Philip Genser; Dept. 835-4, Lorene Rice; Dept. 963, R. M. Brindle, R. P. Muir; Dept. 977-0, J. E. Lauen.

LINCOLN AFB

Ten-year: Dept. 389-3, J. C. Gatewood.

Papers Presented

ASTRONAUTICS

ASHBY—D.E.T.F., with T. J. GOODING, B. R. HAYWORTH, A. V. LARSON, all Dept. 596-0. "Exhaust Measurements on the Plasma from a Pulsed Coaxial Gun," AIAA/Electric Propulsion Conference, Philadelphia, Aug. 31-Sept. 2.

CARSON — Duane B., Dept. 684-1. "Critical Analysis of a Pioneer Weapon System Personnel Subsystem Test and Evaluation Program," Human Factors Subcommittee, Electrical Industries Association, Albuquerque, Aug. 17-19.

FERRISO—C.C., Dept. 596-0. "Temperature Dependence of Infrared Integrated Band Intensities of Atmospheric Molecules," International Association of Meteorology and Atmospheric Physics/International Symposium on Atmospheric Radiation, Leningrad, USSR, Aug. 5-12.

FOGEL—L. J., Dept. 590-0. "An Evolutionary Prediction Technique," IEEE/Institute of Electrical Communication Engineers of Japan/International Conference on Microwaves, Circuit Theory and Information Theory, Tokyo, Japan, Sept. 7-11.

GARRIOTT—Ray, with G. A. BURNS, Dept. 549-9. "Zero G Propellant Gauging Utilizing Radio Frequency Techniques in a Spherical Resonator," IEEE/WESCON, IEEE Summer General Meeting, Los Angeles, Aug. 25-28.

HARDY—W. G., Dept. 261-0. "Impact of Explosive Equivalents on Operations Planning," Armed Services Explosives Safety Board, Shreveport, La., Aug. 18-20.

KLAWA—R. F., Dept. 591-4. "Processing and Display Research of Tiros Satellite Data," UAIDE Meeting, Los Angeles, Aug. 13.

LARSON—A. V., with T. J. GOODING, B. R. HAYWORTH, all Dept. 596-0. "An Energy Inventory in a Coaxial Plasma Accelerator Driven by a Transmission Line Energy-Source," AIAA/Electric Propulsion Conference, Philadelphia, Aug. 31-Sept. 2.

PERL—A. R., Dept. 581-2. "Spark Ignition Parameters of Cryogenic Hydrogen/Oxygen/Nitrogen Mixture," National Bureau of Standards/1964 Cryogenic Engineering Conference, Philadelphia, Aug. 17-21.

Retirements

DAVIS—R. E., Dept. 143-3. Seniority date, Aug. 1, 1950. Retired Aug. 28.

ECKERT—William H., Dept. 596-0. Seniority date, Oct. 5, 1953. Retired July 31.

SANTOS—Jose D., Dept. 250-4. Seniority date, Aug. 12, 1960. Retired Aug. 28.

Personals

To our many GD/Astronautics friends, and especially those in blue print control files, our sincere thanks for your many acts of kindness, sympathy, and well wishes at the loss of our loved one, Donald L. Meads.

Alta M. Griffin, Dept. 832-1
Mrs. Donald L. Meads.

Deaths

BEYER—Walter K., Dept. 290-2. Died Sept. 3. Survived by wife, Liliane.

Volunteers Assist In Civil Defense

Two GD/Astronautics tractor-trailers driven by volunteers C. M. Adams and Everett Benyard played a big part Aug. 29 in the movement of Civil Defense supplies to fallout shelters.

Supplies, provided by the Federal government, were trucked from the Naval Supply Center to shelters at San Diego State College and Mission Valley Center.

Food and medical supplies are made available to local communities, but each community must arrange its own warehousing and transportation. In San Diego, National Defense Transportation Association members, like GD/Astro, arrange the moves. Placement requires about one operation each month.

J. F. Speed, Astro transportation general foreman, coordinated Astro's part in the effort. Adams and Benyard donated their time as drivers.

J. W. Higgins, Astro traffic administrator, is president of the San Diego Chapter, National Defense Transportation Association.

Requests For Refunds Must Be Made Soon

Astronautics employees eligible for tuition refunds for current classes they are attending are reminded this week of a deadline for requesting refunds by educational services.

Astro's educational services office (Col. E-5, Bldg. 33, Plant 71) and industrial relations office (Bldg. 28, Plant 19) have tuition refund requests.

All requests must be submitted for approval within three weeks of the opening class. Questions may be referred to ext. 1931 at Plant 71.

When telephoning, never mind the weather. Get to the point. Telephone time costs money.

General Dynamics NEWS

Published by General Dynamics Corporation, One Rockefeller Plaza, New York, N. Y. 10020; with editorial headquarters at 3302 Pacific Highway, San Diego, Calif. 92112, P.O. Box 1950, telephone 296-6611, ext. 1071. Logan Jenkins, editor-in-chief.

Astronautics Editorial Offices, Bldg. 8, GD/Astronautics, Mail Zone 130-01, P.O. Box 1128, San Diego, Calif. 92112. Telephone 277-8900, ext. 3322. Staff: Bryan Weickersheimmer, editor; Willard Harwood.

Convair Editorial Offices, Bldg. 32, Plant 1, GD/Convair, Mail Zone 1-320, P.O. Box 1950, San Diego, Calif. 92112. Telephone 296-6611, ext. 1071. Staff: Grayce Fath, Helen Pemberton.

GD/Electronics (San Diego) news contact: Helen Wood, 298-4641, ext. 1377, Plant 1, Bldg. 51.

Fort Worth Editorial Offices, between Cols. 71-C and 71-D, Assbly. Bldg., GD/Fort Worth, Mail Zone T-63, P.O. Box 748, Fort Worth, Texas 76101. Telephone PErshing 2-4811, ext. 2961. Staff: Dave Lewis, editor; Mary Beck.

Pomona Editorial Offices, Room 119, Bldg. 1, GD/Pomona, Mail Zone 3-13, P.O. Box 1011, Pomona, Calif. Telephone, NAtional 9-5111, ext. 6226-5279. Staff: Glenn Kehr, editor; Carol Colbert. Daingerfield news office, P.O. Box 947, Daingerfield, Texas. Telephone Lone Star, Texas, 2211, ext. 424.

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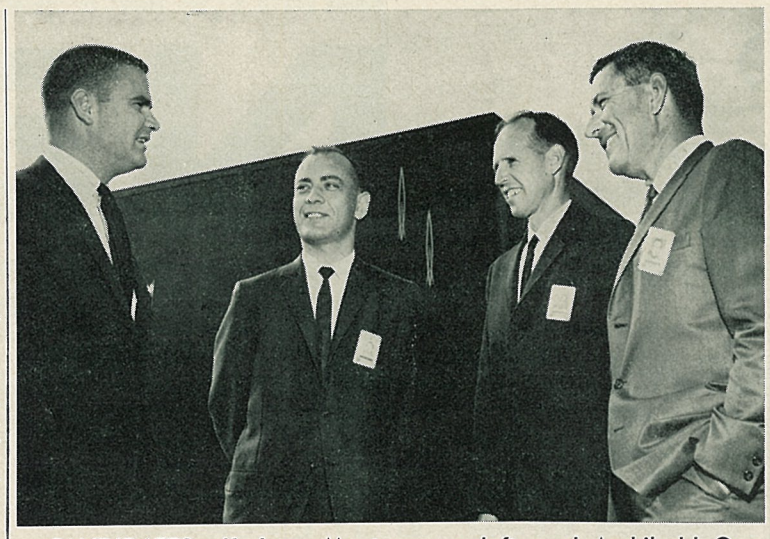
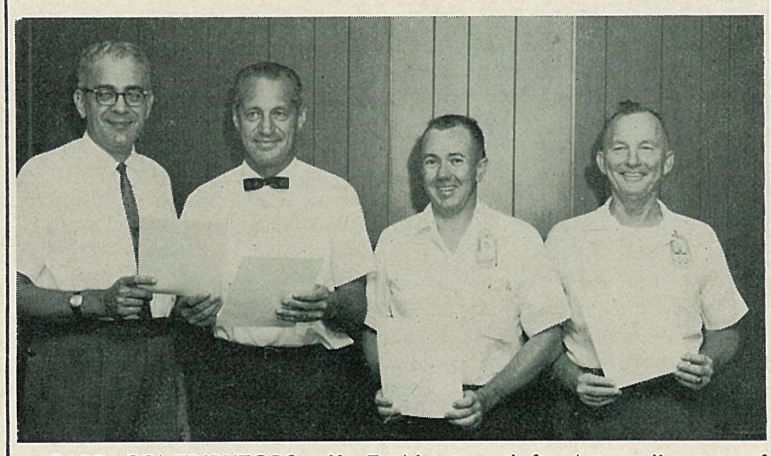
Affiliated editions of General Dynamics NEWS are published in Rochester, N. Y., covering GD/Electronics and Stromberg-Carlson, editorial offices, 100 Carlson Road, HUbbard 2-2200, ext. 2555. Fred E. Voss, editor; and at Groton, Conn., covering GD/Electric Boat, editorial offices at Groton, HIlltop 5-4321, ext. 300 and 513, Joseph Tracey, editor.



CANDIDATES—K. Leon Montgomery, left, and Archibald Gay, have gone "back to school" as recipients of GD/Astro's first two doctoral fellowships. Seeing them off were J. A. Croft, chief of educational services, and Hal Sicard, right, program coordinator, as Montgomery left for University of Pittsburgh and a doctorate in information sciences, and Gay for University of London for engineering studies.



CAPE CONTRIBUTORS—K. E. Newton, left, Astro director of operations at Cape Kennedy, passes out certificates of commendation to, left to right, Don Larson, E. H. Tubridy and E. C. McClellan. Certificates recognize cost reduction-value control projects implemented with a total savings of $27,000.

Astro Suggestion Awards Top National Average For 1963

GD/Astronautics employees receive better-than-average reward for their ideas, according to statistics released by National Association of Suggestion Systems on the basis of reports from nearly 200 major U. S. manufacturers.

Award payments on Employee Suggestions (ESs) at GD/Astro presently average $55 — significantly above the 1963 national average of $39.

Gordon D. Lundquist, Dept. 759, and LaVan McCree, Dept. 573-3 (Sycamore), are two of the many employees who recently earned cash awards through ES submittals.

Lundquist received first payment of $100 on an award which may total $214.60. He suggested that use of a fireman standby during heliarc spot welding might be eliminated with no compromise to safety, since all arc, flame and puddle were enclosed by the welding tip. First year estimated net saving on his ES is $2,146.

At Sycamore Canyon, McCree suggested a modified method of labeling missile components to avoid overspray during stencil painting. He has been awarded $100, and may receive $89.10 as second payment if re-evaluation of his suggestion six months after installation verifies estimated net savings of $1,891.

GD/Astro's ES and CIP programs are operated by the suggestion review and evaluation section of division systems, under Manager D. R. Pardee, who this week issued a reminder to employees whose suggestions were not adopted at first submittal.

Because circumstances resulting in non-acceptance of a suggestion may alter with time, employees are urged to keep their ESs in mind, he said. Within one year of the date of non-acceptance, they may ask that their ESs be re-opened, providing they can justify this action in writing.

Pardee noted that frequently ESs and CIPs are re-opened automatically by the suggestion review and evaluation section with no further action on the part of the submitter, if it appears possibility of approval has improved.

Space Expert to Talk To Management Club

Dr. Homer E. Newell, associate administrator for Space Science and Applications, NASA, speaks tonight (Sept. 23) before an Astronautics Management Club meeting at Del Webb's OceanHouse.

Dr. Newell will discuss "The Future of Unmanned Space Exploration." Atlas Weapons System is the host organization.

Display Planned For Fire Week

For the sixth straight year, GD/Astronautics is preparing to participate in the annual observance of National Fire Prevention Week (Oct. 4-10).

As usual, Astro's efforts will center in the fire department (Bldg. 6). A continuous display of equipment will be shown along the east wall. Literature will be distributed during key periods.

During both first and second shift lunch periods, the inside of the fire station will be utilized to show a sound motion picture, plus color slides of local fire fighting operations. Employees are invited to bring their lunches, according to Fire Chief A. C. Anderson.

Astronautics has ranked among the top international industrial concerns over the past five years taking part in annual competition under sponsorship of the National Fire Protection Association.

Industrial fire losses in the United States during 1963 climbed to an all-time high of over $92 million.

Mgt. Club to Sponsor Two Jr. Achieve Firms

Again this year GD/Astro Management Club will sponsor two Junior Achievement companies, a program designed to give students from age 15 to 18 practical experience in organizing and operating a small-scale business.

Club members have been invited to take part as advisers in records management, sales and marketing, and production. At the same time, employees with eligible youngsters may obtain JA applications for them at employee services outlets.

Additional information is available from L. V. Wisniew, Plant 71, ext. 2679.

Graphic Reproduction Leads Dept. Savings

(Continued from Page 1)

monia prints, and is credited with hard savings of $65,228.

Communication department personnel receiving certificates for still other implemented Cost Reduction Projects included Newton, Dept. 120; E. C. Keefer, Dept. 121; R. T. Blair Jr., Dept. 122; Young and R. L. Hall, Dept. 123; H. I. Reavely, Dept. 124; and K. G. Blair, Dept. 128.

Donations Sought For Library Memorializing John F. Kennedy

An opportunity for General Dynamics employees to participate in the nation-wide John F. Kennedy Library project is being offered through the efforts of local San Diego business and civic leaders.

B. F. Coggan heads the local committee coordinating all fund activities. M. V. Wisdom, Astronautics director of industrial relations, is chairman of the business and industry section of that committee.

This project was a key interest of the late president. His family is leading the drive to carry it to completion. President Lyndon B. Johnson is honorary chairman. Members of the Kennedy family fill key posts in the effort.

Planned for a site on the Charles River, Boston, the $10 million library will be made up of three working components—a museum, an archive and an institute. It will contain personal possessions, papers, etc. of the late president. The institute will encourage young people everywhere to study and understand American political life.

Arrangements have been made to bring the touring Kennedy Library exhibit to San Diego for a free public showing. This is planned for Oct. 3 and 4 in the House of Hospitality, Balboa Park.

Employees wishing to contribute to this nation-wide, nonpartisan endeavor may clip the accompanying coupon, fill it in, and forward it with their contributions to the address noted. All contributions will be acknowledged and are tax deductible.

JOHN FITZGERALD KENNEDY LIBRARY, INC.
P.O. Box 777, San Diego, Calif.

☐ My check payable to John Fitzgerald Kennedy Library, Inc. in the amount of $_____ is enclosed.

☐ I wish to contribute over a period of three (3) years $_____ beginning _____.

Name_____

Address_____

City_____ State_____ Zip Code_____

Divisions 'Round the Turn' In 1964 Safety Contest

GD/Pomona continues to hold the lead in both major categories of the continuing General Dynamics safety contest among divisions, according to performance up to Aug. 1.

In the "best improvement" category, standings remained the same for "win, place and show" money, with Pomona, Canadair and General Atomic continuing in that order. However, Convair moved up to fourth place, ahead of Stromberg-Carlson and Material Service.

In the "best record" contest, year to date, Electronics-Rochester continued in second place but Stromberg-Carlson advanced to third, pushing Convair into fourth. For the "current month," with perfect records, Convair, Electronics-Rochester and Electronics-San Diego led the parade with Fort Worth in fourth.

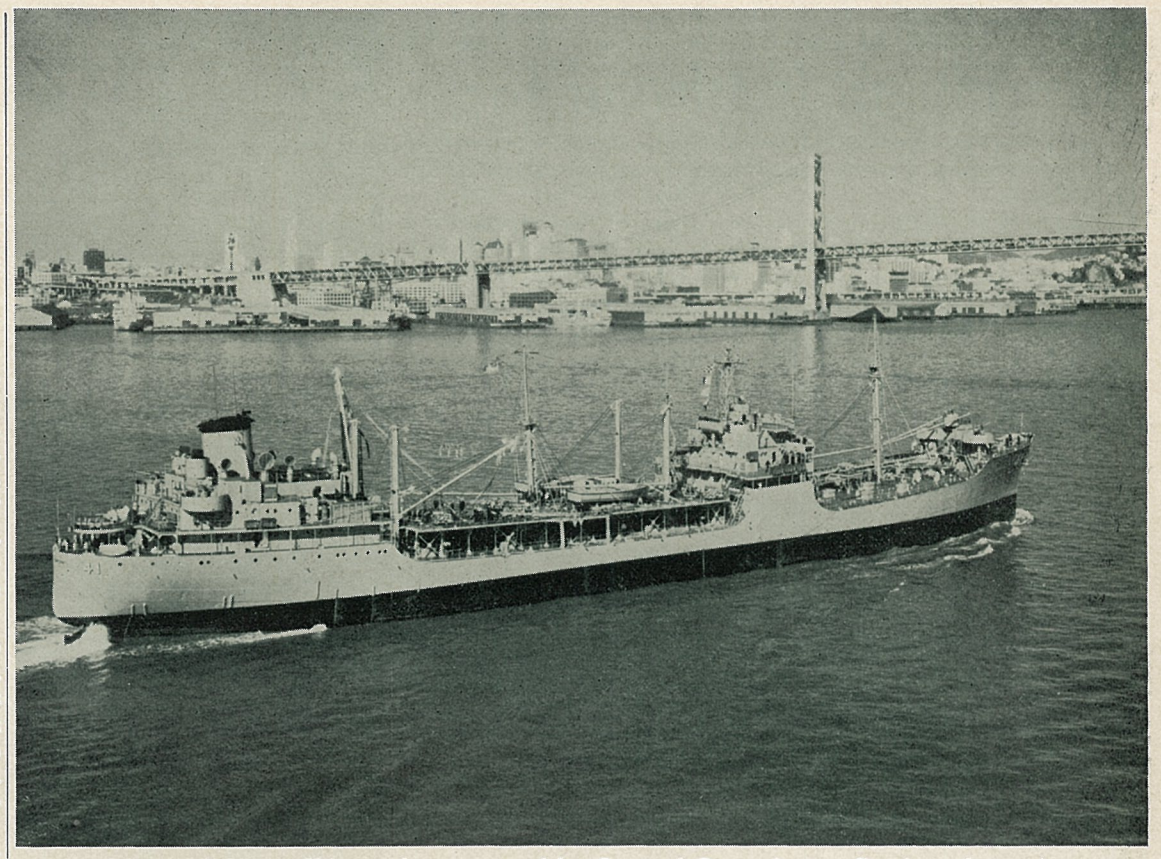
Algie A. Hendrix, Corporate vice president-industrial relations, called attention to the fact that compared to the same period last year the Corporate-wide year to date injury frequency rate has improved 8 per cent and severity has declined 43 per cent.

Safety Standings

Division achieving best record:

Current month: (1) Convair, (2) Electronics-Rochester, (3) Electronics-San Diego. Year to date: (1) Pomona, (2) Electronics-Rochester, (3) Stromberg-Carlson. Division achieving best improvement:

(1) Pomona, (2) Canadair, (3) General Atomic.



FOR CONVERSION — Ships to be converted by General Dynamics to floating electronic centers for spacecraft tracking are of same type as USS Mattaponi (AO-41) pictured here.

ES/CIP Program Saves Million But Is Short of 1964 Target

General Dynamics divisions have saved over a million dollars through their Employee Suggestion/Cost Improvement Proposal programs the first half of the year.

However, the $1,153,000 already channeled into divisional coffers from installed suggestions is short of the half-way mark of the $3 million set as Corporate target for 1964.

GD/Convair led all divisions in total dollars saved. That division's $482,000 in ES/CIP savings is nearly 40 per cent of the total saved by all GD divisions in the first six months. GD/Fort Worth recently has installed two large suggestions that could put it in front by the end of the third quarter.

Fort Worth had the largest number of CIPs submitted; and GD/Pomona, the largest number of ESs.

Astronautics had the largest number of different employees submitting CIPs, while Convair had another first—largest number of different employees turning in ESs.

Electric Boat division had the highest average savings per cash award suggestion (ES), and Fort Worth had the highest average savings per CIP.

Pomona took the shortest time to process suggestions.

Both Astro and Fort Worth had exceeded their 1963 averages in number of suggestions submitted.

Another GD division joined the ES/CIP program with Liquid Carbonic initiating its own set-up in July. It now is processing first receipts and will be included in the next Corporate report.

'Pot-of-Gold' Program Seeks Best Use of Cash

(Continued from Page 1)

superior engineering competence, resourceful selling or good relationships with our customers and the public."

Division response to the program has been excellent, Pedersen reported during the committee's swing across the country.

"Many millions of dollars in liquid assets are required to operate a company as vast as General Dynamics," he explained. "However, we are certain that by careful managerial efficiency at all levels we can reduce the size of this cash sum and thus release assets for profitable use in expanding our enterprises or in debt retirement, thus contributing to the health of the Corporation."

Efforts at Cost Reduction Pay Off During First Half '64

(Continued from Page 1)

Division leaders in the various categories were:

Value control: Fort Worth division; Astronautics; Stromberg-Carlson.

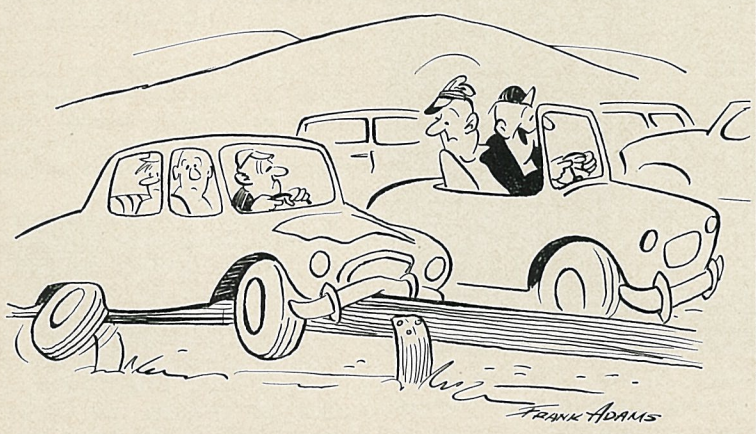
Procurement improvement: Astronautics; Canadair; Fort Worth.

ES/CIP: Convair; Astronautics; Electric Boat.

Resources economics: Astronautics; Electric Boat; Convair.

Management improvement: Astronautics; Electric Boat; Fort Worth.

Productivity improvement: Fort Worth; Stromberg-Carlson; Astronautics.



"Old Joe just won't be happy 'til he can ride a monorail to work."

Ship Building, Electronics Skills Put to Use in Winning Contract

Wide diversity of General Dynamics talents, skills, and capabilities was strongly evident two weeks ago when the Corporation won a $65 million contract to convert three World War II tanker ships, and equip them with extensive electronic tracking, command control, and communications systems for use in the Apollo program.

Directly involved are Dynamics' Electronics division in Rochester (the lead division), Electric Boat (which will convert the ships at its Quincy, Mass., yard), elements of the Electronics division located at San Diego, and Astronautics division. Available are the skills and talents of these divisions, as well as other GD facilities as might be needed.

Roger Lewis, General Dynamics president, commented:

"Few, if any, large systems contractors have the diversity and depth of technical and management competence in-house to do big and complicated jobs like this. By careful planning and coordinated effort we can bring these capabilities to bear on where it really counts—in winning new and important business in the present highly competitive environment."

First of the three tankers which will become floating electronics centers to track American astronauts on their first voyage to the moon will arrive at E-B's Quincy yard later this year. Named the Mission San Fernando, the vessel will be towed to Quincy from the National Defense Reserve Fleet at Ft. Eustis, Va. It will be followed by the Mission de Palo and the Mission San Juan from the reserve fleet at Beaumont, Texas.

The ships are 503 feet long, beam 68 feet, and displace 21,880 tons. After conversion they will be 595 feet long, with maximum beam of 75 feet and displace 22,-153 tons.

New mid-bodies, which will house extensive electronics and communications equipment, account for the increased size. The work is being done under contract to the Navy's Bureau of Ships.

Installation of extensive electronics and tracking gear, as well as checkout, will be done at Quincy under the supervision of the Electronics division as systems manager.

The contract is the first surface ship work awarded to General Dynamics. GD was low bidder in a competition involving 11 other firms.

Combining shipbuilding capability with long experience in communications and tracking, GD is peculiarly fitted for the task.

It was the Astronautics division that created the ultra-reliable Azusa tracking system versions which, since 1953, have tracked nearly every major missile or space vehicle launched over the Eastern Test Range (Cape Kennedy). By the time of Astronaut Gordon Cooper's Project Mercury flight in 1963 (Azusa's 500th tracking task) the system had compiled a reliability record of 99.2 per cent.

Astronautics has also designed and developed the GLOTRAC global tracking system for Air Force missile test center, Cape Kennedy—a system offering more precise tracking than Azusa, plus mobility as well.

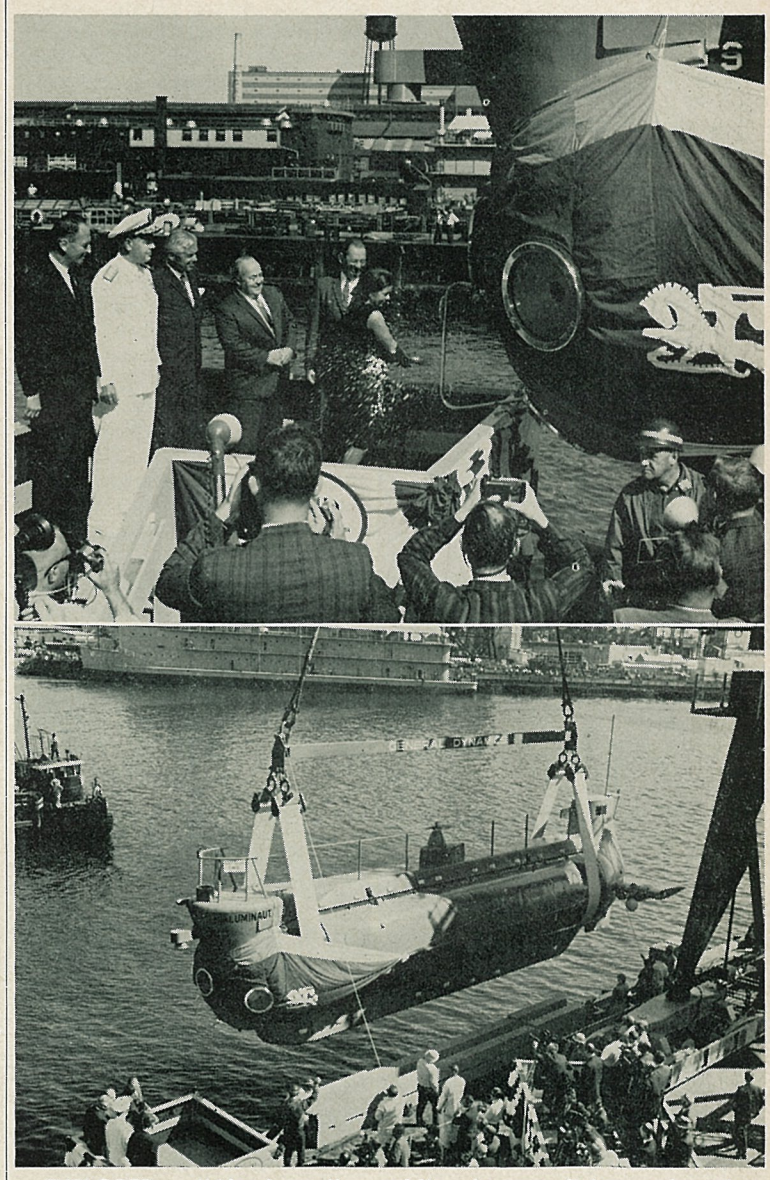
Development of both Azusa and GLOTRAC was directed by S. L. Ackerman, now vice president-operations at Electronics in Rochester.

C-141 Production Rate Increased

C-141 empennage production at GD/Convair stepped into higher gear last month with two of the large tail sections for the Air Force cargo jet transports delivered to Lockheed-Georgia, prime contractor.

The two-a-month delivery rate will continue through October and November and increase to three during December. Production will reach a peak of seven a month some time next year.

Convair is manufacturing 134 C-141 empennages under a subcontract from Lockheed.



EXPLORER — "Aluminaut," world's deepest-diving submarine, designed and built by Electric Boat division for Reynolds International, Inc., was launched at Groton, Conn., Sept. 2. It will operate at depths up to 15,000 feet and be used by Reynolds for research and commercial projects. In top photo, at christening, are, from left: Roger Lewis, General Dynamics president; Rear Adm. John Tyree Jr. deputy commander, Submarine Force, U.S. Atlantic Fleet; Navy Secretary Paul H. Nitze; J. Louis Reynolds, chairman of Reynolds International; J. William Jones Jr., E-B president; Miss Glenn Reynolds, sponsor.

People Mobility

Interdivisional Transfers

Following are recent personnel transfers among General Dynamics divisions. In parentheses are dates when individuals joined the company.

WILLIAM W. PIERCE (1950) from Astro to Fort Worth F-111 program; **M. DON WEISINGER** (1961) from Convair to research group engineer, Astro materials & processes; **CAL W. MORGAN** (1954) from Corporate Headquarters (Los Angeles field office) to Pomona advanced product planning.

Cal Morgan

ORVAL J. ANCEL (1956) from Astro to GD/Electronics-Rochester; **BOBBY G. LONGINO** (1951) from Astro to Fort Worth maintenance engineering; **WADE J. BAYLESS** (1956) from Astro to senior electronics engineer, Convair; **CHARLES DUNLAP** (1957) from Astro to quality control, GD/Electronics-Rochester; **ERNEST H. DeKALB** (1957) from Pomona to Fort Worth airframe design; **DONALD GLYNN** (1963) from Astro to GD/Electronics-Rochester.

JOHN R. MIKULSKY (1940) from Astro to Convair program analyst; **JOHN H. LINKHORST** (1958) from Astro to GD/Electronics-Rochester; **JOHN W. SNIDER** (1951) from Astro to Fort Worth support equipment design; **HOWARD D. MANEY** (1958) from Astro to GD/E-Rochester; **RICHARD J. EDWARDS** (1959) from Astro (Abilene) to Fort Worth maintenance engineering; **FREDERICK M. PANNEK** (1959) and **STANLEY M. RIFFE** (1961) from Astro to GD/Electronics-Rochester; **L. A. DiVINCENZO** (1951) from GD/Electronics-San Diego to manager of general accounting, Stromberg-Carlson, Rochester.

Lou DiVincenzo

KIMBLE M. WILLIAMS (1956) from Astro to Electric Boat as wage and salary administrator; **LANDON L. DAVIS** (1960) from Astro to program engineer at Electric Boat; **SAM O. PICKARD** (1963) from Astro to General Atomic; **NORMAN R. HARPER** (1961) from Astro to industrial relations, Electric Boat (Quincy).

Dynamics Joins Big French Firm To Form Electronics Company

General Dynamics Corporation and Compagnie générale de télégraphie Sans Fils (CSF) have announced formation of a jointly-owned French company. CSF is France's largest electronics manufacturer.

The new company, which will design and manufacture satellite tracking equipment, is to be known as Société d'Equipements Spatiaux et Astronautiques (SESTRO). Its headquarters will be located at Corbeville, near Paris.

SESTRO will combine the expanding activities of CSF's Space Division and the French concern's electronics experience with the technological capability in space systems of General Dynamics, which designed and built the Azusa missile tracking system and Glotrac tracking network used in United States missile and space programs.

The principal organizations in the growing European space market are the European Launcher Development Organization (ELDO) and the European Space Research Organization (ESRO). ELDO has seven member countries, including Australia, while ESRO has nine members.

The President Director general of SESTRO will be G. Muzard, head of CSF's New Weapons Sales Division. The Director general adjoint will be James F. Langston, former manager of field operations for the electronic programs group, GD/Astronautics.

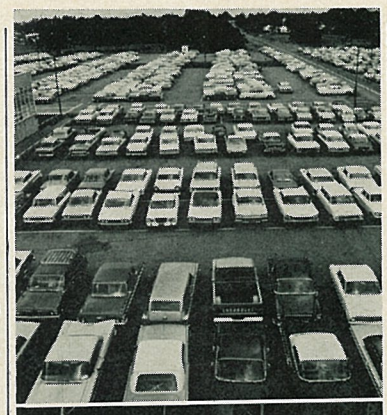
Dynamics to Sponsor Two Negro Students

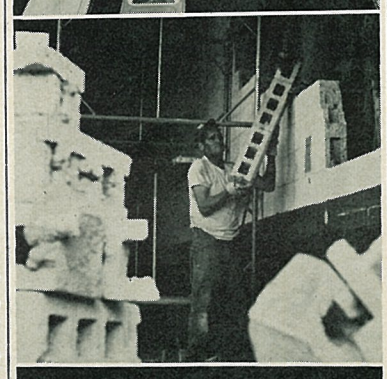
General Dynamics Corporation will sponsor college scholarships for two outstanding Negro students under the new National Achievement Scholarship Program, Algie A. Hendrix, Corporate vice president—industrial relations, announced.

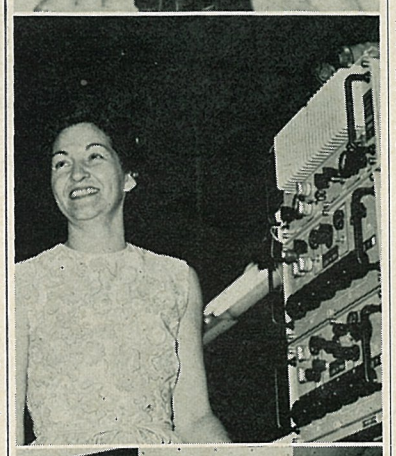
Preference will be given students who plan a career in a business field and who live in the vicinity of a General Dynamics operation.

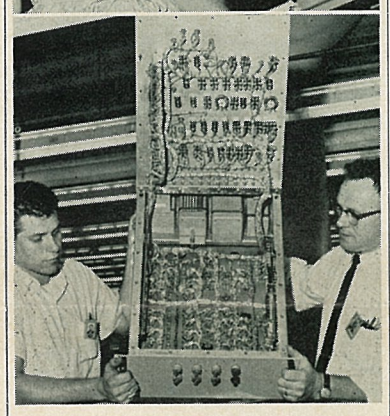
Achievement scholarships range from $250 to $1,500 a year. Winners will be determined in the same manner as National Merit Scholarship winners.

Candidates should consult their individual high school counselors for full details.









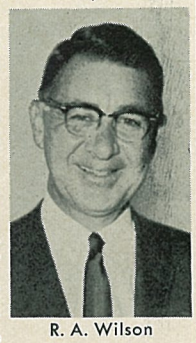
BUSY, BUSY — GD/Electronics at Rochester is moving at faster and faster pace, with employment moving up. Photos, from top down: parking lots were expanded 30 per cent recently; walls are being eliminated to create more space; Mary Mangone, group leader in WRC-1 system production; switching panel for AGERD 6805, attitude and rate test station.

Doyle On Staff Of Value Course

C. W. Doyle Jr., GD/Fort Worth division cost reduction and value control administrator, will appear on the staff of the sixth annual Value Engineering and Analysis course offered by Industrial Education Institute this week in New York City.

GD/E Business Backlog Reaches Record High

Both employment and business backlog for General Dynamics/Electronics at Rochester are at all-time highs and prospects are for the trend to continue, Richard A. Wilson, division president, reported this week.



R. A. Wilson

Employment, which stood at 3,500 in June (**GD/NEWS**, June 17, 1964) now is 4,150 and selective hiring is continuing. From Jan. 1 through July, GD/E hired 1,321 non-exempt employees (including hourly) and 261 exempt. There is a current backlog of 250 departmental requests for employees.

(Typical of demand for qualified individuals at Rochester was the recent loan of more than 60 manufacturing employees from Electric Boat, Fort Worth and Astronautics divisions to help GD/E over a critical schedule.)

GD/E sales backlog at this point is 25 per cent greater than anticipated at the start of the year. This does not include the recently awarded contract for Apollo instrumentation ships. **(See story on page 3.)**

Electronics' spectacular growth in the last year or two was traced by Wilson to several key factors, including:

More efficient operations and improved competitive position;

Continually expanding technical development programs in various product lines;

Fruition of basic studies leading to development of a great deal of specialized know-how.

As an example, Wilson cited the division's current position as a large supplier of single sideband radio equipment. (Single sideband is an advanced circuitry technique that greatly increases the number of frequencies available for transmission.)

The business grew directly from a company-funded program to develop a receiver in the HF band and led ultimately to the SC-900 Series and a decision to tool for production to establish an inventory of completed units. This helped materially to win awards from the Air Force for installations at Atlas, Titan and Minuteman sites.

Coincidentally, Electronics shared with the U. S. Navy a development program for AN/WRC-1 single sideband equipment and development contracts were received later from the Army for AN/GRC-106 and from the Air Force for AN/GRA-42 and 43. Large production contracts for both the AN/WRC-1 and AN/GRC-106 have contributed substantially to the division's sales volume and will continue to contribute in the next few years.

Also contributing a great deal to the division's growth has been the expanding F-111 AGE program (Aerospace Ground Equipment), awarded as a result of previously well-established capability in the field. About 1,400, a high percentage of them engineering and technical personnel, are now engaged in this work.

Wilson called attention to growth of other product lines as well, and cited as typical the award of a $1,100,000 contract for the AN/TLQ countermeasures set; $800,000 for a missile range instrumentation control system (RICS); $500,000 for machine language typewriters; and over $1,100,000 for telemetry and tracking receivers.

Study contracts also have been received in such areas as vocoders, speech compression, crypto facilities, value engineering, thin films, micro-TACAN, hydroacoustics, ferroacoustics storage, laser modulation, etc., all of which extend division technical knowledge and point the way for valuable new products.

Meanwhile, space has become a factor at the division's 800,000 sq. ft. plant at 1400 North Goodman street.

To make room for expanding operations, substantial interior changes are being made in the plant. Wide corridors, useful to the previous occupant before the buildings were purchased by General Dynamics in 1956, are giving way to more conventional aisles and the space is being put to use. Partitions have been moved or eliminated, for the same purpose. Parking lots have been expanded 30 per cent.

The general atmosphere at Electronics-Rochester is one of a busy "going concern." In a statement to employees last month Wilson said:

"We find ourselves in the best position we have ever been in... But we must not be complacent ...No customer gives us any business. We have to earn it either with a better product or a lower price—or some of both."

Computer Displays Gain in Versatility With New Matrix

A new component has been developed to expand the versatility of computer displays produced by General Dynamics' Stromberg-Carlson division.

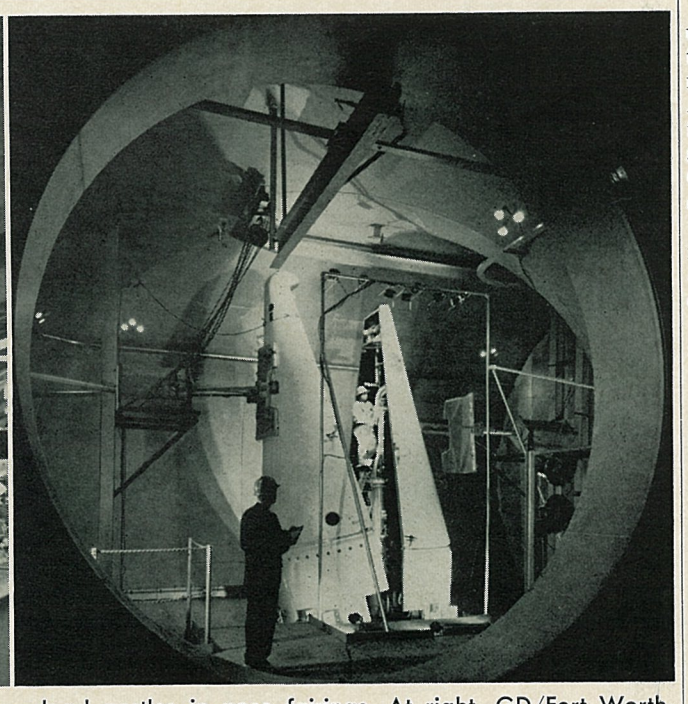
The component, a matrix containing 96 different characters and symbols instead of the usual 64 available in the CHARACTRON® Shaped Beam Tube, is being incorporated into new computer display systems produced by Stromberg-Carlson at its San Diego facility.

Initially, the matrices will be used with 7-in. CHARACTRON tubes which Stromberg-Carlson is manufacturing for the National Aeronautics and Space Administration's Mission Control Center at Houston, Texas. Stromberg-Carlson is supplying computer display equipment under a contract from Philco Corp. which is responsible for development and equipment of the center where data will be acquired and processed during Gemini and Apollo space shots. **(GD/NEWS, Jan. 2, 1964.)**

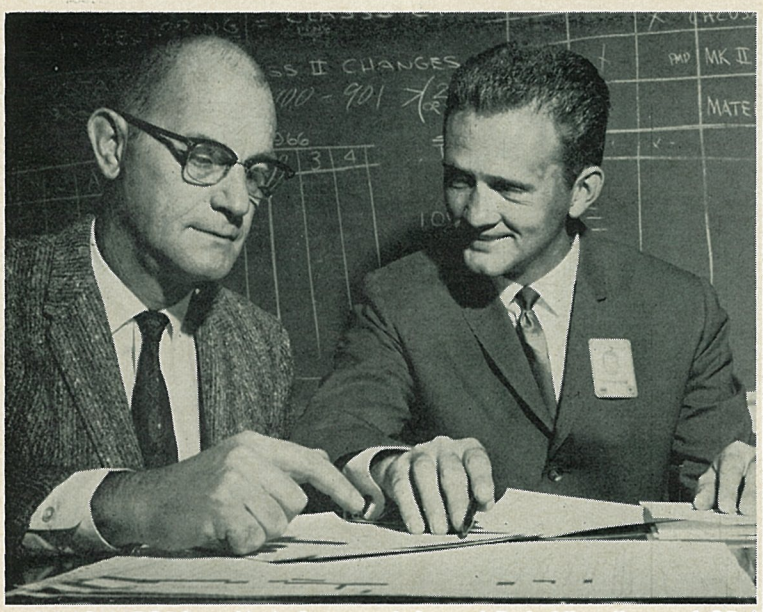
The matrix is the key component of the CHARACTRON tube, a proprietary cathode ray tube used to translate computer codes into understandable information on its face.

The standard matrix array contains 64 characters, arranged eight rows horizontally by eight rows vertically. All alphabetic characters are upper case.

The newly-developed matrix is capable of presenting both upper and lower case letters, plus a variety of symbols and Greek letters. The tube also has a spot writing capability, producing an .008-in. spot at four microamps.



SPECTACULAR — At left is full-scale Centaur launch vehicle exhibit, heart of NASA's Lewis Research Center representation in "Parade of Progress," recognizing opening of Cleveland, O. convention center. Display included Astronautics-built Centaur tank which NASA used with cutaway section and "packages" to show how payload nestles in nose fairings. At right, GD/Fort Worth-built nose fairing, which will protect lunar-landing Surveyor spacecraft, launched by Atlas-Centaur combination, is shown undergoing testing in environmental Space Power Chamber at Lewis Research Center.



INNOVATORS — H. J. Sumner, left, and R. L. Vincellette of GD/Astronautics review single form, Operational Planning and Production Order, which, with Planning Control Sheet, constitute total documents required in new "one-write" planning system they developed.

Planning Paperwork Reduced By Astro's 'One-Write' System

A new "one-write" shop planning system which provides the timeliness of manual methods with the efficiency and thoroughness of computerized techniques was installed recently at GD/Astronautics division.

Developed in tool planning and design (Dept. 420), the system reduces paperwork in several departments and provides faster release of new and revised planning documents, while retaining the multitude of advantages inherent in GD/Astro's computerized planning system **(GD/NEWS, Jan. 9, 1963).**

Submitted as a Value Improvement Project, the system won credit for $506,000 in hard savings for the operations department, under the division's value control program.

Previously, when planning was completed a Planning Control Sheet (PCS) was prepared and the information entered the computerized planning system.

Then, one to three days elapsed while shop paper was generated and distributed to production areas. Still more time was required—up to an additional three days—if a planning error was detected by the computer.

On GD/Astro's high priority program, this time lag presented a serious problem. It seemed impossible to release planning through the computer and still permit the shop to meet its rigid schedules.

This was the challenge recognized by General Supervisor H. J. Sumner, who asked H. L. Prettyman and R. L. Vincellette of Dept. 420 to investigate.

The "one-write" technique is the outgrowth of their efforts.

The system is precisely what its name implies. Planners write only once—on a new, three-part, snap-out form which includes an off-set printing master.

A single writing, using the "one-write" form (called an Operational Planning and Production Order) produces a keypunch copy with computer information, a file copy, and the master for reproducing shop paper.

Once initial planning has been approved by quality assurance and time study, production departments can begin work at once, while the keypunch copy of the form activates the computerized planning system at the same time.

A major advantage of the "one-write" method is that in the event of supplemental planning or changes, planners simply issue a second form which automatically up-dates the permanent paper.

The new method eliminates nearly 90 per cent of the planning paper required in the earlier "dual write" systems. It facilitates quick release of new and revised planning documents to the shop, and replaces all previous planning forms except the PCS with a single form.

Use of the technique is expected to improve schedule capabilities for planning release, reduce previous confusion among planners and shop personnel alike as to "which planning form to use for what task," and ease the planning workload by automatic up-dating.

FAREWELL — Joe Anchner, left, and Art Kumm, Grumman engineers, get Texas-style send-off from GD/FW's B. J. Moore, Dept. 71 general foreman.

No Foolin'

TEXAS-SIZE EARS CONVINCE SKEPTICS

Two New Yorkers headed home recently, convinced that all Texas tales aren't necessarily "tall" ones.

Joe Anchner and Art Kumm, Grumman engineers who recently completed an F-111 assignment at GD/Fort Worth, were at first admittedly skeptical of Lone Star braggadocio.

They especially doubted the complaint of Hollis Ford, Dept. 22, that jackrabbits — Texas size, of course — were eating watermelons on his farm.

But when the Grumman engineers got ready to return home, Ford had a surprise for them: a pair of genuine seven-inch jackrabbit ears, tanned and ready to mount.

"I killed one of the culprits—a 15 pounder—and saved the ears for the Grumman boys," Ford said.

Anchner and Kumm helped design a completely common hydraulic system (to both Air Force and Navy F-111s) for the tail section.

"They did a marvelous job, and it was a real pleasure working with them," said B. J. Moore, Dept. 71 general foreman.

"The Peace Corps is just supposed to work with people, Crumley."

Rotating Model of F-111 Scheduled For Prominent Spot at World Fair

World's Fair visitors will soon be viewing a one-quarter scale model of the F-111.

The big model made its debut at the recent Air Force Association conclave in Washington, D. C. From there, it was to be placed in an Air Force exhibit at the Fair.

A virtual replica of the Air Force F-111, the model will rotate constantly atop a pedestal, while the wing completes a "sweeping" operation every two minutes.

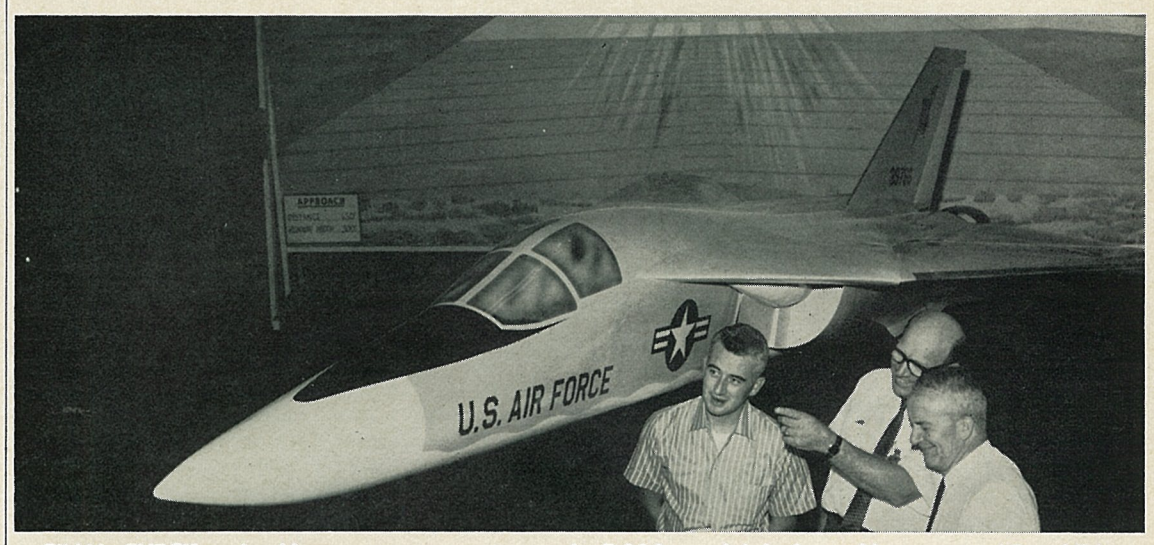
Small motors in the pedestal and fuselage furnish power for the operation.

Built of fiber glass and wood, the model's hollow fuselage is supported by wooden bulkheads.

FW Dept. 85, (mockup), completed the task in about six weeks, in time for the model to appear at the AFA convention.

W. A. Shahan is Dept. 85 supervisor, while Claude Houp Jr. is general foreman.

Monitoring shipment of the model to the convention, and later the Fair, was A/1C Michael O'Neill, Air Force Orientation Group, Wright-Patterson AFB, Ohio.



FINAL CHECK — Looking over one-quarter scale F-111 model before shipment to AF exhibit at World's Fair are, from left: A/1C Michael O'Neill, AF Orientation Group, Wright-Patterson AFB; W. A. Shahan, GD/Fort Worth Dept. 85-0 supervisor; and Claude Houp Jr., Dept. 85-0 general foreman.

GD/FW Research Facility Will Test Heat's Effect on Apollo Spacecraft

Effect of re-entry heat on the Apollo spacecraft will be simulated soon in GD/Fort Worth's "improved" Hyperthermal Research Facility.

During a two-week period, about 96 models will be subjected to temperatures of up to 8,000 degrees Fahrenheit.

"Runs of up to two minutes in duration will be made in this test," said Gene Hull, project aerodynamics engineer, "and in the future, runs will last as long as 20 minutes."

The models, resembling an over-sized bullet, will be made of ablative materials, similar to the outer "skin" of the Apollo space ship. This material will peel away upon re-entry.

"We will measure the mass loss of the materials due to ablation and check temperatures at the base of the model, which will simulate the actual surface of the space craft," Hull said.

HRF is used to simulate the extreme speeds of space flight, plus the terrific heat generated by re-entry.

It works like this. A heat-producing plasma generator is the nerve-center of the facility. Bottled nitrogen is pumped into the generator and heated instantly as it passes through a high-intensity electric arc. Nearly two million watts of electric power can be supplied to the arc. The apparatus is cooled by water.

A secondary gas, oxygen, is injected into the stream to form simulated air, which then rushes into the test chamber through a nozzle at speeds as high as 7,000 miles an hour.

Speed of the air stream is determined by a family of "supersonic nozzles." Two nozzles have been built for the Apollo experiments.

Improvements in HRF which permit faster runs are an air-conditioned control room and more sophisticated mechanical and electrical circuitry.

"Where we could run only about four data points a day previously," Hull said, "we can now run as many as 20."

The Apollo experimentation is but one of a series of new "space-age" tests slated for HRF.

"We plan to make studies of the effect of high speeds—up to Mach 10—on space-craft inlets," Hull said.

GETTING READY — Apollo model is readied for run in GD/Fort Worth's Hyperthermal Research Facility by Gene Hull, project aerodynamics engineer.

Mother's Feat of 100 Years Ago Repeated by McMahon of GD/FW

Take it from J. F. McMahon, GD/Fort Worth Dept. 15-2, kissing the Blarney Stone doesn't give one a "gift of gab" at all.

In fact, it leaves you quite breathless!

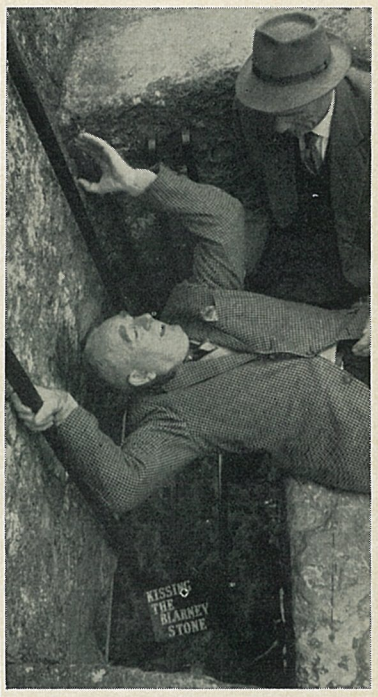
The famous stone is imbedded some 200-feet high in the outer wall of ancient Blarney Castle in Cook, Ireland.

"To kiss the stone," McMahon said, "you must extend the top part of your body over this opening, then drop your head down a couple of feet, then twist your neck back all the way."

All this after climbing 200 feet of circular stairways to reach the rock in the first place.

In short, it's sort of a "back-breaking" experience. And this is why, he reckons, relatively few tourists — or natives, for that matter—have actually kissed the rock.

But McMahon, you might say, had motivation: his mother had bussed the fabled stone over 100 years ago. "After all," he said, "if your mother did it . . ."



ROMANCING A ROCK—Kissing Blarney Stone is real athletic feat, J. F. McMahon, GD/Fort Worth Dept. 15-2, discovered on recent trip to Ireland.

Kissing the Blarney Stone was the highlight of McMahon's return to Ireland after a 50-year absence.

He was born in the village of Kilkenny, where he spent the first 11 years of his life. Despite industrialization, he said, many things remain much as they were nearly a half century ago.

McMahon and his wife recalled many other interesting experiences during a 21-day tour of the Emerald Isle, England, France, Switzerland, and Italy.

He met Pope Paul VI at the Castle Gondolfa outside of Rome. And he just missed a visit with the president of Ireland, whom he had met 32 years ago in Ohio.

ART AND ARTIST — GD/Astro's Thomas Potts exhibits watercolor works which are earning him increased prominence in art world. Many pictures shown were developed from sketches made during vacation to Westport, Conn., where he held one-man show.

Water Colors

GD/Astro Buyer, Rising Artist, Holds One-Man Show in East

Thomas S. Potts is a buyer (Dept. 813) for GD/Astronautics. He is also an artist of rising prominence, who found special encouragement in an almost "triumphal" return visit to his boyhood home.

Last month, Potts and his wife, Ruth (for many years secretary to R. H. Biron, former General Dynamics vice president, now vice chancellor of University of California at San Diego) journeyed to Norwalk and Westport, Conn., taking with them 54 of the artist's recent watercolors.

There, in the East Coast cultural and artistic center, Potts held a one-man showing of his work.

Tom Potts graduated from Norwalk, Conn., high school in 1938, studied painting with the late Arthur Elder of Westport, and then went west to school and stayed to "seek his fortune." This year's vacation was his first return visit in 17 years, 13 of them with General Dynamics.

But in the interim, painting for Potts has become an engrossing hobby. He continued study with California artists, exhibited widely throughout the Southwest, and began to garner his share of prizes and blue ribbons. His work was included in the 1964 Southern California Exposition show, "Santa Barbara to the Border," judged by Vincent Price, Irene Periera and Vance Kirkland.

Potts' Connecticut show attracted a discriminating audience, including, besides local residents, Frederic Whitaker, internationally famous watercolorist and contributing editor to American Artist magazine.

Visitors included General Dynamics friends, James L. Budros, Corporate director of compensation and personnel development, and Robert A. Bussey, Corporate insurance manager.

When the show was over, Potts had sold more than 60 per cent of the works he displayed—mostly landscapes of California, Arizona and Mexico. ("I think perhaps they wanted a change from red barns and lobster pots," he joked.)

Back in San Diego, Potts now spends much of his leisure time developing paintings from sketches made during his trip east.

Local art fanciers may currently see his watercolors displayed in Balboa Park's Spanish Village. There, Sept. 27, he will demonstrate painting in Studio 25 on behalf of San Diego Watercolor Society, for which he serves as a board member.

Convair Daughter Joins Range Group

A 19-yr.-old Convair daughter unexpectedly joined the Convair family at White Sands Missile Range, N. M., for her first job this summer when her name was drawn through a local secretarial service.

Gail Peterman, daughter of Frank Peterman, long-time Convair employee now Dept. 311 lead inspector at White Sands, got her first taste of work with the company when she was sent in response to a request for a vacation fill-in.

For a couple of weeks recently she assisted Flo Lawhead in the office of J. S. Boaz, site administrator, while Joanne Larkin was on vacation.

JOINS FAMILY — Gail Peterman, Convair daughter, at work on job with Convair group at White Sands.

DUCKS UNLIMITED INVITATIONS SET

General Dynamics nimrods who enjoy duck hunting have been invited to the 21st annual Ducks Unlimited dinner slated for Oct. 1 at El Cortez Hotel (International Room).

Payne Johnson (Stromberg-Carlson-SD) is chairman. Astro's George Cowan is a committeeman. They may be reached at exts. 1377 and 3818, respectively, for tickets. Astro employee services, Bldg. 8, also has tickets available.

Tickets are $15 each and cover a social hour, roast squab dinner, premiere showing of the latest Ducks Unlimited waterfowl movie, and an opportunity to win many prizes.

Special attraction will be Edgar Bergen, Charlie McCarthy and Mortimer Snerd.

Proceeds from this annual affair are used to help restore waterfowl breeding grounds in Canada.

New Tote Boxes Aid Handling

Initial shipments of the latest type modular tote boxes have been placed in service at GD/Astronautics in still another improved material handling effort.

They will comprise an engineered system of containers, accessories and inserts for toting and storing everything from transistors to terminal boards, small pieces to complete assemblies. They will handle greasy or wet components to super-clean items, either extremely cold or hot.

Boxes are now available in seven sizes. They range from 11 to 22½ inches long, 8¼ to 17½ inches wide and 3½ to 8 inches deep.

Made of high density linear polyethylene, each box is complete with a snap-on clear plastic top, plus either a snap-on or fixed label area. Plastic dividers may be used to make each container a multiple carrier. Foam may be added as protection for shock or vibration-prone components. Each is designed to facilitate stacking and nesting, minimizing space requirements in storage areas.

Receiving inspection received the initial allotment of tote boxes. There, incoming parts and components are transferred into appropriate boxes prior to routing through the environmental test laboratory and ultimately to stores areas. Once emptied, boxes are returned to receiving inspection for recycling.

As additional tote boxes are received, they will be dispatched to electronic manufacturing and regular production and storage areas throughout the division.

Coordinating this added material handling improvement for Astro has been the task of the material handling and packaging engineering department under C. C. Harper Jr.

Astro Tennis Team Wins Net Tourney

Scoring 45 out of a possible 50 points, an Astro tennis team recently swept to first in an industrial net tournament held over a five-week period.

Astro fielded two teams in the event which also attracted teams from Cubic, Electro Instruments and Navy Electronics Laboratory. Each team played two doubles and two singles matches per week, scoring points for each win.

Astro's winning doubles players were Bill Curtiss, Ron Geist, Morry Higgins and Larry Hobson. Larry Chambers and Terry Chatwin handled singles competition. Team alternates were Bob Bochman, John Cannau, Cecil Norwood and E. W. Rothe.

Efforts are being made to expand this league for future tournaments. Individuals interested may contact Astro's Ray Hardy, ext. 2549, or Darrell Lachel, league commissioner, at 277-6780, ext. 389.

Blendells to Appear At Teen Club Dance

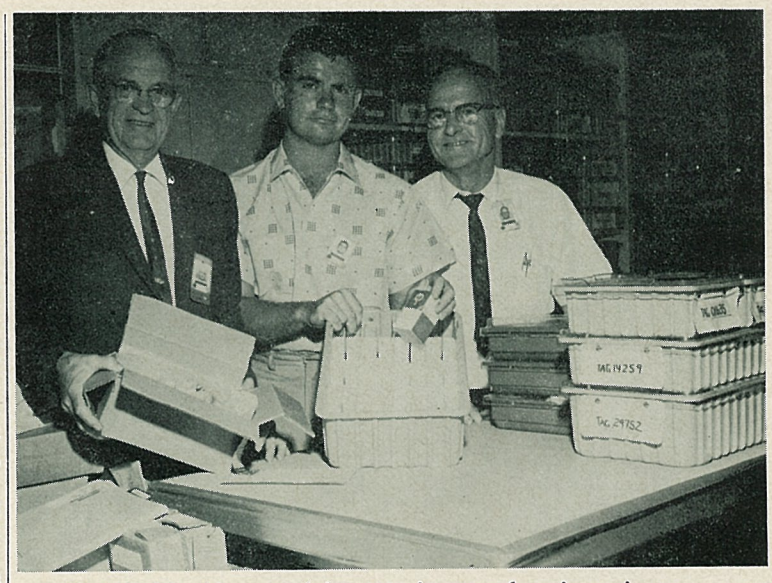
"The Blendells," popular recording group, will be featured at ARA Teen Club's Oct. 3 dance, 7:30 to 11:30 p.m., in ARA Clubhouse.

Members with dates may invite another couple to accompany them, while members arriving "stag" may bring one guest. Admission will be 50 cents for members, 75 cents for guests.

Commissioner John Hess said good school clothing will be appropriate.

Hess also issued a reminder to parents that more adult chaperones are need for club events, and invited those who wish to help to contact him at 469-6498, evenings.

GD/Astro employees may pick up club applications for their teen-agers at employee services outlets. The club has scheduled top teen attractions for up-coming dances, including "The Surfaris" for its Oct. 17 event.



THE LATEST—New modular tote boxes of various sizes are now in use at GD/Astro to protect and improve parts handling. First to receive boxes was receiving inspection where, from left, Lee Sattro, supervisor, Bruce Fayette, electronic inspector, and Jim Beck, material handling and packaging engineer, place incoming parts in boxes.

Junior Rifleers Are Victorious In Both Team, Individual Events

Astro Junior Rifleers out-shot three other club entries in both team and individual competition at the Area Invitational Tournament hosted by Valley Gun Club juniors at El Cajon Aug. 29.

Jr. Rifleers' Gold Squad, made up of GD sons from Astro and Convair, totaled 1,830 points to runner-up Poway's 1,799. Valley Gun Club was third and Pacific Beach, fourth.

Astro's five-man team was not only high in team scoring but had high overall individual scores in first three places. Dick Ellis finished with 383 out of a possible 400 points. He shot a perfect 200 in prone position; dropped one point in sitting position to score 99; and scored 84 out of 100 in standing event. Second-place Gold Squad member, and second placer in the tourney, was John Tramposh, 368. Robert Eaton was third with 364. Dominic Cognato shot a 359 and Bill Crosthwaite, 356.

Ivus Ellis, assistant coach, was squad coach for the tourney in the absence of Dave Farrelly, coach.

The squad is now priming its guns for the Southern California Junior Invitational meet at El Monte this Saturday, Sept. 26. Rifleers will enter six in individual shooting and three two-man teams in squad competition.

Bob McGregor of Convair Dept. 6 is Astro Junior Rifleers club leader and Martin Miller of Convair still photo lab is chief instructor.

Memory Training Course Offered

General Dynamics employees throughout the San Diego area are eligible to take part in a special memory training course opening for a 10-week period Oct. 5.

Sessions will be held each Monday from 7 to 10 p.m. in the lounge, House of Hospitality, Balboa Park.

Don Robinson, local memory expert, will instruct. Cost is $25 per person for the entire program, payable at the initial session. Robinson may be reached at 281-3344 for information.

The course is under the sponsorship of the San Diego Industrial Recreation Council.

Astro Players Win In Bridge Tourney

Members of ARA Bridge Club took active roles both as planners and players during the recent San Diego Sectional Bridge Tourney at Stardust Hotel.

G. N. Hampton, Dept. 170, was instrumental in planning and coordination of the annual event, which attracted many of the country's top bridge fans.

Singular success in the contest came to GD/Astro's Marvin L. French, Dept. 376, who won both the men's pairs and open pairs competition.

Other ARA contestants receiving awards in one or more events were: Gene Alford, Elma Buchanan, John and Stella Christy, Ralph and Isabel Emerson, Billie Evans, Mrs. French, Hampton, Mrs. Jim Hanratty, H. H. Johnson, J. F. Jaminett, Paul and Kathy Lewis, Ceil McCullough, Tony and Jo Miller, Mitzi Rustad. Al Silverman, Ann Stephens and Craig Stump.

Divers Will Compete At Cardiff Oct. 11

Astro Divers will gather at Cardiff-by-the-Sea at 9 a.m. Oct. 11 for their regular monthly lobster and fish competition.

September honors in the spearfishing class went to Bob Nichols with Charles Davis and John Phair close behind. Jorge Zorrilla copped abalone fishing laurels followed by Nichols and Phair.

Rod Johnson continues to hold the annual spearfishing lead in the form of a 62-lb. white sea bass he landed without breakaway gear.

Space Facility Visit Open to GD Families

A "Goldstone Safari" sponsored by several professional groups still has openings for interested General Dynamics personnel.

It will be held Oct. 3, departing San Diego around 7 a.m.; returning around 8 p.m. Objective will be a visit to the Goldstone station of the Deep Space Instrumentation Facility (south of Bishop). Air conditioned buses will be used, with the cost per person either $4 or $6, dependent upon group membership. Families are invited.

GD/Astro's M. M. Chazotte, ext. 1687, instituted the trip and will supply information. Assisting him are Astro's Eric Herz and F. M. Millican.

Weight Engineers To Meet Tomorrow

San Diego Chapter members, Society of Aeronautical Weight Engineers, will gather at Romaines Mexicano at 7 p.m. tomorrow (Sept. 24) for a dinner-business meeting.

A. C. Marshall, vice president-engineering of HEXCEL Products, will discuss "From Egg Crate to Missile."

SALVAGE YARD HOURS SET

Convair's salvage yard will be open this Saturday (Sept. 26) for employee sales and again on Oct. 10. Astro has scheduled three open sales days during the month of October. The Kearny Mesa salvage yard will be open to GD people the mornings of Oct. 3, 17, 31.

When telephoning, never mind the weather. Get to the point. Telephone time costs money.

NEW EQUESTRIANS — High points of instruction offered soon by Astro Horseman's Club in ARA Arena are illustrated by disciplined group in center photo. In left photo, Instructor Mike Jaques gives pointers to Mickey Donahoo, and in picture at right he wears Scout uniform while discussing Horsemanship Merit Badge requirements with ARA Commissioner Joe Pena, left. Mounted students looking on are Dave Foti, Valerie Burmeister, Larry Mitchell. Lessons, beginning through advanced, are offered in eight-class series for $15 to all Astronautics employees. — Photos by Tina Pena and Clark Mitchell.

Sports & Recreation

ROCKETS END SEASON WITH 28-18 RECORD

With a season record of 28 wins and 18 defeats, the Astro Rockets softball nine has closed out a summer season.

The Rockets dropped their final exhibition game before the largest ARA Field crowd to date early this month, a 3-0 loss to Gardena, defending world's champs.

The Rockets lost a 2-1 game to Ralph's Hawks in the ASA district tournament.

Two wins, 3-2 and 4-0, carried the Rockets into the semi-finals of the Southern California Municipal Athletic Federation Minor "A" tournament at Lakewood. Both victories were at the expense of Dillard's Apartments of Oceanside. Palm Springs eliminated the Rockets in a 2-0 game that went into extra innings.

The Rockets have turned their attention now to winter activities by entering a local slow-pitch league in San Diego.

ARA Radio 'Hams' Plan Mystery Hunt

Plans for a "Mystery Transmitter Hunt" to be held in early November will be discussed tonight (Sept. 23) at a 7:30 meeting of ARA Amateur Radio Club in ARA Clubhouse.

The "Hunt," scheduled for Nov. 4, is designed for members with mobile equipment, with the object of tracking down a hidden transmitter by use of mobile receivers and loop antennae. Contest teams will consist of a driver-operator and an assistant to manipulate the directional antenna.

Wives Club Starts New Knitting Class

A new Astro Wives Club activity will get under way tomorrow (Sept. 24) in Room B, ARA Clubhouse, when the first session of a knitting class convenes.

Open to wives of all GD/Astro employees, the class will meet each Thursday, 1 to 3 p.m., under direction of Mrs. Edwin J. Whitley, who will supply information on required materials to those who call her at 466-0851.

Dept. 780 Wins Championship

National League winners, R&D Electronics (Dept. 780) topped competition from American and All-Star Leagues to capture GD/Astro's 1964 plant championship softball title recently.

Season climaxed in a single elimination play-off in which Dept. 780 downed All-Star (second shift) champs, the Comets (Dept. 250), with a 9-2 score; then trounced Spoilers (Dept. 591), American League champs by a 3-1 margin.

Rudy Lopez, pitching for R&D Electronics, hurled a one-hitter and struck out 13 batters in the final round of the play-off at ARA Field.

During 14 games of regular season play, Lopez chalked up four no-hit games, two single hit contests, and a perfect game.

Frank Berry managed the plant championship team, with Mel Mills manager for Spoilers, and L. Scott directing Comets' activity.

TOP TEAM—Members of R&D Electronics softball team display trophy for plant championship which they captured in single elimination play-off. Rear row, from left, are Carl Binns, Noah Moffett, Beryl Lanterman, Frank Reid, Rudy Lopez, pitcher. Front row, Frank Lay, left, Dick Strobel, Wayne Riner, Manager Frank Berry, "Buck" Marx.

ARA Calendar

(GD/Astronautics Recreation Association has some 40 activities in operation for employees. For information, call ARA Headquarters, ext. 1111.)

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AMATEUR RADIO — Meeting tonight (Sept. 23), 7:30 p.m., ARA Clubhouse.

ASTRO JR. RIFLEERS—Club shoot Oct. 3, 8 a.m., Gillespie Field Range.

ASTRO NAUTS — Beginners' square dance class open for final time, Sept. 29, 8 p.m., ARA Clubhouse.

BRIDGE — Special Master Point night, Sept. 25, 7:30 p.m., ARA Clubhouse.

GUN CLUB — Registered ATA trapshoot tonight (Sept. 23); Troy trapshoot Sept. 27, Gillespie Field Range.

ORGAN CLUB — Meeting Oct. 6, 7:30 p.m., ARA Clubhouse.

RIDING — Instruction offered weekly in ARA Arena, eight lessons for $15. Register at employee services office.

TEEN CLUB — Dance, 7:30 p.m., Oct. 3, ARA Clubhouse, featuring "The Blendells."

TRAILER CLUB — Work-play outing, ARA Area, Sept. 26, 27.

WIVES CLUB — Special membership tea, 1 p.m., Oct. 7, ARA Clubhouse. All Astro wives welcome.

Last Chance Nears For Square Dancers

After next Tuesday (Sept. 29), doors close until spring and no new members will be accepted in ARA-sponsored beginning square dance activities.

The Astro Nauts open their ranks twice each year—fall and spring—to enroll new members.

Beginning instruction is offered from 8 to 10 p.m. each Tuesday for a 20-week period. Graduates then move on into more advanced circles.

Lessons carry the dancers from simple walk-throughs of currently popular dances through the more skilled maneuvers that have made square dancing one of ARA's more popular spare time activities. Cost is a nominal 50 cents per week.

Organists Schedule Oct. 'Jam Session'

Astro's Organ Club meets at 7:30 p.m. Oct. 6 in ARA Clubhouse for a "jam session," one of two featured events held monthly.

The first Tuesday of each month is devoted to "jam sessions" with members playing, discussions of coming concerts, events, etc. and other items of interest to organists. The third Tuesday (also at 7:30 p.m.) is devoted to instruction—classical, popular, theater, etc.—taught by Leroy Snyder.

Interested individuals are invited to attend either meeting or contact ARA, ext. 1111, for information.

Classes in Horsemanship Slated Soon in Astro Riding Club

A new series of horseback riding classes for all Astronautics employees in the San Diego area is opening soon under the joint sponsorship of ARA and the Astro Horseman's Riding Club.

Classes will meet for one hour each at 4:30, 5:30 and 6:30 p.m. on Tuesdays and Thursdays in the Astro Horseman's Riding Club show ring located in the ARA Area adjacent to Plant 71.

Both western and English style classes will be available ranging from introductory beginner, beginner, intermediate and advanced. Private sessions may also be arranged at various levels upon request.

The cost is $15 for each series of eight one-hour classes. Preferred rates are available for members of the Horseman's Riding Club and horse owners. Rates include the use of ARA-provided horses for non-owners.

Registration applications are now available at all employee services outlets and should be accompanied by cash or check covering fees upon presentation. Individuals will be scheduled into classes and notified directly as to the starting dates, times, etc.

Mike Jaques, instructor, announcer and horseman, directs all classes.

There are no age limits on students, although younger boys and girls must demonstrate the ability to control their mounts before being accepted.

Trailer Club Pairs Work, Recreation

Work and play combined last month at an outing of ARA Trailer Club when the group assembled in the Recreation Area for a weekend camp-out and to work on construction of the new ARA Railroad.

This theme will be repeated this weekend (Sept. 26-27) when campers will be parked at the east edge of the Area. "Railroading" will combine with games and potluck meals.

At the previous gathering, 34 members with eight "rigs" turned out.

In addition to monthly outings, the club holds business meetings at 7:30 p.m. the first Tuesday of each month in ARA Clubhouse.

MEMBERSHIP TEA TOPS WIVES' AGENDA AS SEASON OPENER

Astro Wives Club will hold a special membership tea between 1 and 2 p.m., Oct. 7 at ARA Clubhouse.

Mrs. Nelson J. Deveau, membership chairman, indicates the tea will give potential members an opportunity to meet active club members, learn of the various programs planned for wives, and will serve as an invitation to join.

As an added service, baby sitting is provided during most Wives Club affairs at a nominal 50 cents per family.

The Wives Club is currently moving into its busiest season, now that school is re-opened, Mrs. Deveau said. On tap during the months ahead are: a card party (Oct. 23); a Hollywood bus tour (Nov. 4); plus a variety of special events.

Of key concern now to club members is a planned scholarship effort. Various fund-raising events, etc., will be held in the near future to help raise $250 for the scholarship. Details will be available soon.

SHINING UP—Astro Wives Club will hold a tea from 1 to 2 p.m. Oct. 7 at ARA Clubhouse to welcome new or prospective members. Planning for the event found this trio polishing tea service. They include, from left, Mrs. Raymond B. Bulman, Mrs. Nelson J. Deveau, membership chairman, and Mrs. R. J. Redlein. All wives are invited.

SMASH HIT — General Dynamics presentation at Air Force Association, featuring F-111, was outstanding highlight of Washington, D.C. convention. A. E. Allis of GD/Fort Worth is shown addressing one of 44 groups briefed on new fighter.

1,000 Key Leaders Hear F-111 Story

The story of F-111 development through wind-tunnel testing was "enthusiastically received" by over 1,000 key Air Force, industry and civic leaders in Washington recently.

All told, GD/Fort Worth engineers gave the 15-minute briefing 44 times, mostly to standing-room-only groups at the Air Force Association convention.

A. P. Madsen, chief of aerospace model tests, GD/FW, and A. E. Allis, assistant project engineer, delivered all briefings.

Top-level visitors to the exhibit included Hon. Eugene M. Zuckert, Secretary of the Air Force, and Roger Lewis, General Dynamics president.

Four models representing various F-111 design development milestones were shown on rotating columns.

"Our first designs (in 1960) were long, slender airplanes," Madsen said, "but wind-tunnel tests were disappointing."

As a result, GD/FW design engineers began working on shorter airplanes with larger frontal areas. This resulted in a lighter, more efficient structure.

At this juncture, Department of Defense specified a need for a plane to fit not only TAC, but Navy requirements. Happily GD's new design fitted their requirements: a shorter airplane for easier stowage and handling aboard carriers. This configuration was called model 1,000.

Extensive testing of this 1/20th scale model in the GD high-speed wind tunnel at San Diego (and later NASA tunnels at Langley Research Center) proved the feasibility of a bi-service concept, Madsen pointed out.

In October, 1961, the official request for proposal was released. Grumman joined GD/FW as a "Navy oriented" partner.

"We revised configuration 1,000 to include a large wing area to meet Navy carrier suitability requirements," Madsen said. "The result was model 10-7.

Further studies led to more improvements and ultimately model 65B was developed, followed by model 12.

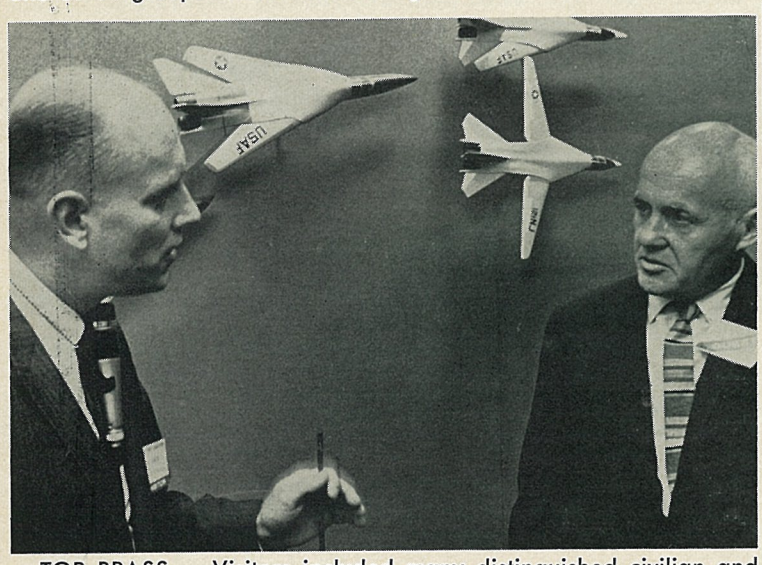
"At this time, we took advantage of another new technique developed by NASA in the SST program," Madsen said. "This approach blended the wing and body."

"Results on this model were highly gratifying," Madsen continued. This was the design that won the competition in November, 1962.

GD/FW has conducted tests in six private tunnels and 14 government tunnels throughout the country. By first flight, models will have flown about 20,000 hours.

A highlight of the AFA convention was the aerospace education reception and luncheon, which GD sponsored for the second year.

Gen. B. A. Schriever, Commander Air Force Systems Command, spoke at the affair.



TOP BRASS — Visitors included many distinguished civilian and military leaders, including Air Force Secretary Eugene M. Zuckert, right, shown here in conversation with GD/Fort Worth's A. P. Madsen.

NUMBER TRAINING ON OWN TIME AT GD/FW AT NEW PEAK

Late registration for fall semester in-plant TCU courses — already at a record peak — will be continued through this week in GD/FW educational services.

Nearly 450 employees signed for 38 courses during regular registration. This represents the largest number ever to enroll for in-plant courses in a single semester. All courses will be taken on the employee's own time.

Of the 38 classes, 34 are being held for first shift, four for second shift.

In addition to in-plant registration, another estimated 200 enrolled in college courses on campuses at TCU, Arlington State and other area colleges.

Still another estimated 200 employees enrolled in the TCU-SMU graduate engineering program. In this program, students can take 12 hours of required math courses at TCU and the required engineering courses on the SMU campus.

Technical Institute courses — both in-plant and at Tech — attracted another estimated 350 employees. Predominantly technical in nature, the curriculum also includes a number of business and general courses in the adult-education area.

All told, this makes about 1,200 GD/Fort Worth employees who are going to school this fall on their own time.

Paschal and Fields Guest Lecturers

Frank Paschal, health physics administrator, and Dr. R. E. Fields, staff specialist in nuclear research and development, both of Fort Worth division, were guest lecturers recently at a week-long course on "Management of Radiation Accidents."

The meeting was held in Austin and was co-sponsored by the State Health Department and U. S. Public Health Service.

GD/FW MAN EARNS MASTER DEGREE

William F. Black, Fort Worth Dept. 162-5, was recently awarded a master of science degree in mechanical engineering from Southern Methodist University.

General Dynamics Men To Be Prominent At National Space Engineering Parley

General Dynamics men from four divisions are involved in the planning and the program of the National Aeronautic and Space Engineering and Manufacturing meeting sponsored by Society of Automotive Engineers Oct. 5-9 in Los Angeles.

J. H. Famme, Convair division president, is a member of the manufacturing forum executive committee and aeronautics program planning committee. Other Convair men participating are B. J. Simons, B. G. Glass, Donald Conover and W. H. Steurer.

GD/Astronautics will be represented by E. D. Bryant, also on the manufacturing forum executive committee, as is G. E. Sylvester of GD/Pomona. Astro's F. D. Applegate and W. W. Withee are committee members for the aero meeting's program planning.

Astro men giving papers are J. L. Cody, E. D. Heller, E. S. Saari, John Burnett, J. F. Brady Jr., C. J. Dunn, R. W. Gerber, D. C. Valkema, J. F. Hinton, R. W. Hagen, H. Pallulat, and R. Klawa. R. W. Gerber is organizer of the Ground Support Equipment session. M. D. Weisinger, formerly of Convair, is co-organizer of Materials and Manufacturing Techniques for Supersonic Aircraft.

Sylvester is co-organizer of Electronic Packaging session with W. H. Friedlander, also GD/Pomona, co-chairman of the same section.

W. M. Rowell of GD/Fort Worth is scheduled to give a paper the closing day of the session dealing with hydraulic subsystems for aircraft.

Copies of the program are available from Applegate and Withee at Astro and from Simons, Glass, or Steurer at Convair.

REDEYE DISPLAY SENT TO ALABAMA

A GD/Pomona booth featuring the shoulder-fired Redeye missile will be exhibited at the Alabama State Fair (Birmingham, Oct. 5-10) as a part of the Army Missile Command's display of modern weapons.

Knowledgeable Young Students Quiz Experts

"Solar radiation . . . closed ecological systems . . . plasma propulsion . . . lasers . . . space navigation . . . orbit equations . . ."

These and other topics were bantered about with such easy familiarity earlier this month at GD/Astronautics that an uninformed listener might have assumed that a meeting of distinguished scientists was taking place.

The experts were there, all right — six of GD/Astro's most eminent: Dr. J. M. Lagerwerff, B. G. MacNabb, B. A. Mendoza, J. W. Crooks, Dr. D. H. Sowle, Dr. D. H. Garber. But the give-and-take on esoteric topics was originated (and knowledgeably) by the balance of the assembly — some 90 teen-age boys.

The youths were visiting GD/Astro as part of a Navy-sponsored tour of scientific and military establishments. They were "Science Cruisers," guests of the 11th Naval District, an honor each had earned by winning local, regional or national Science Fairs earlier this year.

With Ray Blair, Astro manager of community relations, as host, the boys were given a slide-illustrated introduction to General Dynamics, and taken on a pictorial tour of Astro facilities. Then, for nearly an hour, questions flew hard and fast as they put their queries to the experts.

Concluding the panel session, Blair asked MacNabb, GD/Astro's director of test engineering, to summarize his advice to pre-college youths hoping to make a place for themselves in aerospace fields.

MacNabb pointed to the infancy of the space age, saying, ". . . all we've done so far is to push the Wright brothers off the hill at Kitty Hawk."

He told the youths that opportunity in the field was unlimited, regardless of the profession they chose, citing space law, celestial mechanics, space medicine, etc., as examples. He urged them to "get the fundamentals in physics, chemistry, math."

Mendoza emphasized another side to the coin. "Take a ton of English, speech, public speaking, writing," he said, explaining that other requisites to success were a knowledge of philosophy and psychology—human dynamics.

"No matter what brilliant schemes you may come up with," he said, "they're worthless unless you can communicate — convince someone else of their value."

QUIZ SECTION — Group of sharp young students visited GD/Astronautics recently as part of Navy sponsored tour and kept panel of experts on their toes with questions. At right, Astro's Ray Blair, standing, was moderator and panel included Dr. J. M. Lagerwerff, B. G. MacNabb, B. A. Mendoza, J. W. Crooks, Dr. D. H. Sowle, Dr. D. H. Garber. At left is photo study in concentration as boys, Science Fair winners from Western states, considered penetrating questions to tax hosts.

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ASTRONAUTICS EDITION

GENERAL DYNAMICS NEWS

Vol. 17, No. 21 PUBLISHED BY GENERAL DYNAMICS CORPORATION Wednesday, October 7, 1964

Short Term Cost Target Plan Success

A value engineering innovation —a cost target program for short term, low production programs— has been developed at GD/Astronautics, and is now being applied to design of a GLOTRAC/Azusa transponder test set.

The program, which makes "cost" a design parameter, is uniquely applicable to short projects of relatively small dollar magnitude where neither time nor funds are available for total value engineering. It is designed to yield a maximum return for the VE effort expended.

Basis of the program was establishment of a total target cost for the test set—selling price less overhead, engineering, etc.—and a factor to allow for "cost growth." This sum was then apportioned as individual cost targets proportional to the value of every unit or sub-unit involved, in a breakdown carried to the level at which each target is the responsibility of a single engineer.

Since this ground-work was laid, design has progressed with designers measuring performance against their cost targets by means of periodic estimates. Typically, three estimates will be made toward each target, permitting identification of "cost trends" for each design phase.

(Continued on Page 2)

Value Seminar Graduates 43

Monthly value engineering seminars resumed last month at Astronautics with 43 taking part in the September class.

It was the seventh VE seminar held this year, and others are planned on a one-per-month schedule for the remainder of 1964. Everett Lindem and Hal Sicard of educational services (Dept. 130-3) conduct the programs.

The workshop program uses actual production items as training projects, each of which has been carefully selected for both instructional value and potential savings. Current projects were submitted by operations, Atlas Weapons System and Space Launch Vehicles.

Seminar 7-64 teams and their projects were:

Team #1—Tube positioner (submitted by operations). P. A. Carlson, Dept. 380-1; T. R. Devin, Dept. 403-3; R. L. Kaiser, Dept. 549-6; D. R. Nash, Dept. 146-0; A. S. Stebbins, Dept. 454-0. Project leader, A. S. Page, Dept. 403-3.

Team #2—Fuel fill and drain outlet support (submitted by operations). S. L. Demille, Dept. 373-1; W. M. Kain, Dept. 732-0; D. E. Diller, Dept. 557-1; J. M. Garrison, Dept. 649-0. Project leader, Page.

Team #3—Static ground bracket (submitted by operations). A. J. Bridger, Dept. 404-1; L. J. Lauffer, Stromberg-Carlson; J. B. Young, Dept. 661-8; R. W. Schwartz, Dept. 557-1; D. S. McKinlay, Dept. 556-5. Project leader, C. F. Greer, Dept. 373-1.

Team #4—Umbilical wire housing (submitted by operations). A. Aschettino, Stromberg-Carlson; J. Cody, Dept. 290-1; R. W. Eilers, Dept. 380-6; J. Hickman, Dept. 425-3; D. A. Johnson, Dept. 525-1. Project leader, Greer.

Team #5—Cableway positioner (submitted by SLV). S. Schneider, Dept. 987-2; E. V. Smith, Dept. 382-3; J. S. Blum, Dept. 987-3; D. M. Brown, Dept. 403-3; J. C. Peck, Dept. 525-1. Project leader, N. B. Carlton, Dept. 146-5.

Team #6—Autopilot remote set component (submitted by AWS). H. T. Dillon, Dept. 960-0; R. T. Gribbin, Dept. 780-4; W. G. Parker, Dept. 665-5; T. Reese, Dept. 141-2; P. Mihalich, Dept. 547-5. Project leader, Carlton.

Team #7—Fuel start flex line (submitted by operations). M. Cornwall, Dept. 694-0; E. Irwin, Dept. 406-0; J. A. Sindelar, Dept. 523-7; E. D. Ruggles, Dept. 523-6; D. A. George, Dept. 780-3. Project leader, S. W. McBain, Dept. 650-0.

Team #8—All Inertial Guidance system cooling installation (submitted by AWS). V. Henke, Dept. 547-3; W. H. Rumbaugh, Dept. 700-0; R. H. Sparks, Dept. 143-3; D. A. Heald, Dept. 962-4; L. Gibson, Dept. 403-3. Project leader, McBain.

AWARD ENCORE — President J. R. Dempsey positions star on flag awarded last year to GD/Astro employees for performance in U. S. Savings Bond purchases. Star, awarded in lieu of second flag, was presented to division recently by Barbara Chandler, right, area manager, Savings Bond Division, U. S. Treasury Department. Astro's current performance (over 80 per cent) recently drew congratulations from A. A. Hendrix, Corporate vice president-industrial relations.

'Do Good Work' Awards Earned At San Diego and Vandenberg

September was a "big" month for Astronautics' Do Good Work program with Craftsmanship awards both in San Diego and at Vandenberg AFB, presentation of special honors to a VAFB unit, and announcement that Cape Kennedy operations (ETR) had joined the program.

At Vandenberg AFB, results of the August competition for PALC-I (Dept. 682-1) "broke the bank" as the unit achieved a Quality Index of 130 — the program's highest possible score!

Site Manager R. A. "Dick" Clark accepted the plaque on behalf of PALC-I employees from T. L. Maloy, manager of test and launch operations—SLV.

Customer representatives on hand for the presentation included Col. Q. A. Riepe, vice commander, 6595th Aerospace Test Wing, with Lt. Col. R. L. Beers and Majors V. W. Kuns and W. C. Chambers of his staff, as well as Lt. Col. F. G. Nixon, Western Contract Management Region, VAFB.

Two weeks later, another Craftsmanship "first" occurred at

(Continued on Page 2)

Craftsman Program Will Be Explained

Astronautics received a special invitation to make a Craftsmanship presentation this week during a motivation workshop at Air Force Systems Command Headquarters, Washington, D.C.

The invitation was issued by Lt. Col. Theodore G. Zey Jr., acting chief, quality assurance division, Directorate of Contract Management.

Representing Astro at the Oct. 5 meeting — attended by senior personnel of major AFSC units — were W. E. Magnuson, Sam Petcher, and V. G. Heger.

CRAFTSMAN HONORS — In top photo, General Foreman Ray Kendall, right, accepts August Craftmanship award for San Diego operations, on behalf of Dept. 758 employees. From left: E. D. Bryant, vice president-operations, President J. R. Dempsey, L. R. Kiersey, chief, materiel quality branch, AFPRO, Plant 19. In lower picture, PALC-1 (Dept. 682-1) at Vandenberg captures off-site honors with plaque going to Site Manager R. A. Clark, second from right. From left: Lt. Col. F. G. Nixon, WCMR, VAFB, Curt Johnston, T. L. Maloy, Clark, Col. Q. A. Riepe, vice commander, 6595th Aerospace Test Wing. Present, but not shown: Lt. Col. R. L. Beers, Majors V. W. Kuns, W. C. Chambers.

Con-Trib Drive Shifts to 'High'

With a meeting for departmental solicitors today (Oct. 7), the month-long campaign to boost membership in GD/Astronautics Employees' Con-Trib-Club moves into "high gear."

Active solicitation will be conducted Oct. 12-16—designated as "Fair Share Week" by President J. R. Dempsey, campaign chairman.

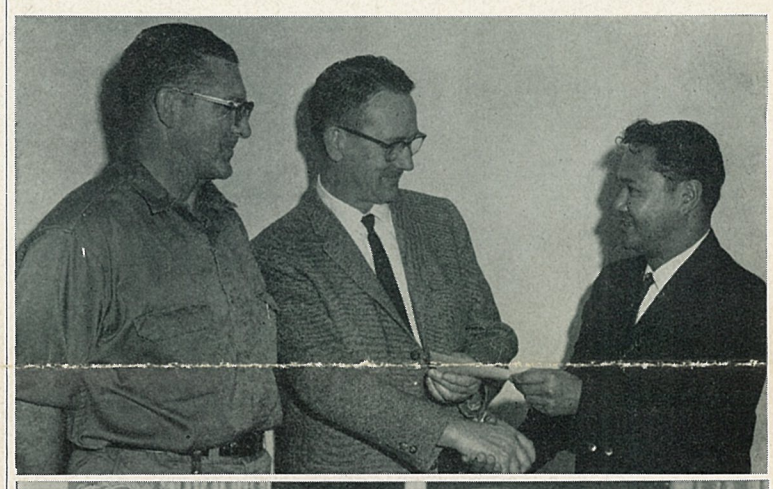
During this period, emphasis will be placed exclusively on encouraging Con-Trib members to do their Fair Share by pledging four minutes' pay per day for the betterment of their community.

At the conclusion of Fair Share Week, membership solicitations will continue, with the hope of receiving a response to the C-T-C appeal from all employees by Oct. 23.

Throughout the drive, charts noting departmental C-T-C participation will be posted prominently in GD/Astro facilities, as an added incentive in the "one-for-all" effort.

Con-Trib-Club unites all GD/Astro employees in a common charitable effort, as members authorize regular deduction of a small sum from every pay check.

Ten per cent of the amount collected is earmarked to aid GD/Astro employees in time of need through Con-Trib's Emergency Aid Fund. The balance is disbursed both to United Community Services (which supports some 79 San Diego charities and service organizations), and to dozens of other worthy non-UCS agencies.



CON-TRIB AT WORK—These scenes are repeated throughout year as Astro Employees' Con-Trib-Club channels badly needed funds to responsible service organizations, off-site and in San Diego. At top is moment at which Vandenberg AFB C-T-C presented $1,000 to Santa Maria Council for Retarded Children, with M. E. Van Winkle, center, accepting check from Astro's Tony Estalio, right, and Bob Ihrig. Below, J. C. McFall, Dept. 193, demonstrates piano presented by C-T-C to Mesa Vista Mental Hospital to Mrs. Betty Marts, hospital's director of volunteers, Charles DeNardo and Mike Alianelli of C-T-C Board. McFall entertains patients with weekly two-hour concerts as volunteer.

'Education With Industry' Officers Report For Duty

Two Air Force career officers, Capts. Ronald L. Bulmer and Dominic F. Chilbert, have reported to Astronautics division for a nine-month Air Force Institute of Technology "Education with Industry" program.

This is the eighth consecutive year Astro has cooperated with the Institute in this important program on a "no-cost" contract basis.

Capts. Bulmer and Chilbert are taking "Industrial Planning and Procurement." They will study and observe Astro's organization and operations with particular emphasis on management of raw materials and finished products, production and assembly, recording and accounting, industrial and public relations, service and maintenance, and reliability control.

Each will be assigned for varying periods to Astro functions where management will provide a clear and accurate picture of Astro activities and capabilities.

Capt. Bulmer, a 10-year Air Force veteran, is a graduate of the University of Washington. He

(Continued on Page 2)

FACTS, FIGURES — Capts. Ronald L. Bulmer and Dominic F. Chilbert, left, Air Force Institute of Technology "Education With Industry" students just assigned to GD/Astro, go over facts, figures with E. G. Hill, controller, right, and David Epstein, assistant controller, during briefing.

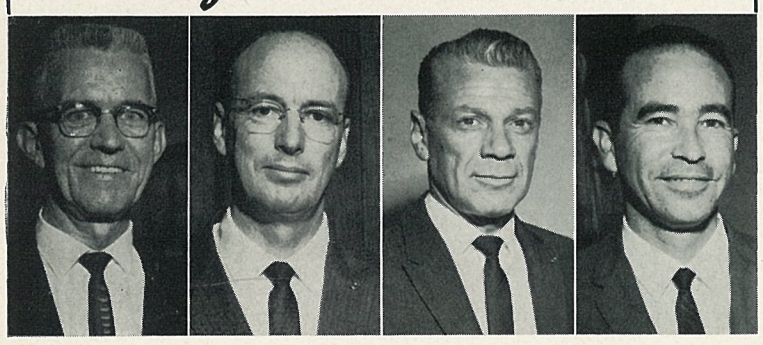
EWI Officers Report at Astro

(Continued from Page 1)

has attended specialized training courses and filled numerous field positions. His last assignment, at Ent AFB, Colo., was as a missile officer.

Capt. Chilbert holds degrees from Omaha University (BA) and St. Mary's University (MBA) and has been in the Air Force seven years as a commissioned officer. He has also taken part in specialized training and field assignments and served as a flight training officer at Lackland AFB, Tex., in his most recent duty post.

Log Book Entries



New 30-year man at Astronautics is Vince Cernuto, Dept. 840-0, (third from left). Others, all 25-yr. men, are: R. W. Calvert, Dept. 731-0; Donald G. Clark, Dept. 951-2; G. P. Collins, Dept. 403-1.

Service Emblems

Service emblems due during the period Oct. 1 through Oct. 15.

Twenty-five-year: Dept. 400-0, G. A. Grossaint; Dept. 410-0, E. C. Generas; Dept. 832-3, N. W. Johnson.

Twenty-year: Dept. 336-1, C. J. Oswald; Dept. 756-0, D. J. Pearson; Dept. 988-3, H. C. Shoffner.

Fifteen-year: Dept. 143-2, Wilmer Olson; Dept. 250-5, K. E. Trondle; Dept. 369-4, W. L. Harris; Dept. 403, G. R. Farrington, A. J. Thurlby; Dept. 462-0, E. R. Baldwin; Dept. 759-0, E. L. Malsack Jr.

Ten-year: Dept. 141-2, R. E. Carver; Dept. 250, W. J. Stanley, G. C. Siegmund, T. F. Gurbacki; Dept. 311-0, W. A. Blood; Dept. 376-1, W. L. Evans; Dept. 405-0, Carol J. Parkhurst; Dept. 452-0, H. E. Defenbaugh, G. C. Swaim.

Dept. 501-0, Helen F. Holland; Dept. 522-2, Lenna, M. Omanson; Dept. 525-6, J. D. Palmer; Dept. 528-3, W. J. Sevier; Dept. 547-3, G. W. Oliver; Dept. 556-7, T. G. Richardson; Dept. 642-2, J. L. Rolston; Dept. 662-7, J. C. Hoppe; Dept. 694-0, W. H. Discher; Dept. 731-0, Benton Travis; Dept. 732-0, Cleo W. Campbell; Dept. 744-0, C. W. Cronin, F. D. Mankins; Dept. 756-0, J. E. Strzelczyk; Dept. 832-3, C. W. McCormick; Dept. 952-3, Hirsch Gottschalk; Dept. 962-2, F. C. Taylor.

Personals

We wish to express our heartfelt thanks to his Dept. 250 co-workers and many other friends at GD/Astronautics for their kindness and expressions of sympathy upon our bereavement.

The family of
Warren G. Knight

* * *

The family of Floyd Sherman wants each of you to know how much your expression of sympathy means to us. We are grateful for your thoughtfulness.

Doris Sherman

* * *

We wish to express our sincere thanks to all our Astro friends for their thoughtfulness during our sorrow at the loss of our son, Laverne.

Leonard Willett, Dept. 661-4
and Family.

Papers Presented

ASTRONAUTICS

ASHBY—D. E. T. F., Dept. 592-0. "Energy Loss in Pulsed Coaxial Plasma Guns," processed for publication in AIAA Journal.

BRADLEY—J. W., Dept. 290-4. "Effects of Porosity on High Strength Steel Welds," American Welding Society, San Francisco, Oct. 5-8.

BUJKOVSKY—G. J., Dept. 170-2. "An Integrated Data Processing System Developed for the Support of a Weapon System," processed for publication in Missiles & Rockets.

HARSHBARGER—F. C., with L. D'ATTORRE, both Dept. 592-0. "On the Parameters Affecting Normal Shock Location in Underexpanded Gas Jets," processed for publication in AIAA Journal.

HELLER—E. D., Dept. 192-0. "Value Engineering in Subcontracts," SAE/Aeronautics and Space Engineering Forum, Los Angeles, Oct. 5.

PALLULAT—H., with R. KLAWA, both Dept. 591-4. "Pinpointing System Malfunction," SAE/Aeronautics and Space Engineering Forum, Los Angeles, Oct. 5-9.

POPPA—H. R., Dept. 592-0. "Progress in the Continuous Observation of Thin Film Nucleation and Growth Processes by Electron Microscopy," American Vacuum Society, Chicago, Sept. 29.

Retirements

BARTHOLOMEW—L. W., Dept. 975-2. Seniority date, May 16, 1955. Retired Aug. 21.

BEAVER—John A. Jr., Dept. 148-3. Seniority date, Sept. 25, 1955. Retired Sept. 1.

WOODIE—James H., Dept. 143-2. Seniority date, Feb. 7, 1951. Retired Aug. 14.

Deaths

ALLARD—Dane R., Dept. 124-0. Died Sept. 16. Survived by wife, LaVerne, three children.

SHERMAN — Floyd A., Dept. 547-0. Died Sept. 17. Survived by wife, Doris.

VANDENBERG AFB

RAPPLEYEA—William C., Dept. 682-2. Died Sept. 16. Survived by wife, Connie, four children.

General Dynamics NEWS

Published by General Dynamics Corporation, One Rockefeller Plaza, New York, N. Y. 10020; with editorial headquarters at 3302 Pacific Highway, San Diego, Calif. 92112, P.O. Box 1950, telephone 296-6611, ext. 1071. Logan Jenkins, editor-in-chief.

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Fort Worth Editorial Offices, between Cols. 71-C and 71-D, Assbly. Bldg., GD/Fort Worth, Mail Zone T-63, P.O. Box 748, Fort Worth, Texas 76101. Telephone PErshing 2-4811, ext. 2961. Staff: Dave Lewis, editor; Mary Beck.

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* * *

Affiliated editions of General Dynamics NEWS are published in Rochester, N. Y., covering GD/Electronics and Stromberg-Carlson, editorial offices, 100 Carlson Road, HUbbard 2-2200, ext. 2555. Fred E. Voss, editor; and at Groton, Conn., covering GD/Electric Boat, editorial offices at Groton, HIlltop 5-4321, ext. 300 and 513, Joseph Tracey, editor.

Short Term Cost Target Plan Success

(Continued from Page 1)

If an estimate appreciably exceeds its cost target, the unit in question is scrutinized by a value engineering team in an effort to bring it back "into line."

S. D. Lepen of Dept. 521-0, who developed the cost target program, has reported that to date it is functioning effectively.

Lepen, a value engineer, serves as chairman of the cost target team on the test set program, with other members including George Eaton, Dept. 010-2 project engineer; H. A. Vasques, design group engineer, and J. R. Blackwood, senior electronics engineer, both Dept. 032-3.

This group, with help from such specialists as are required, established various cost targets for the project, and spearheads VE efforts.

R. L. Gillham of division estimating (Dept. 195-0) handles project estimating tasks, with the final estimate for each unit to require ultimate approval of electronic programs estimating.

"A key effect of the program is to make cost visible to designers during the design phase," Lepen explained, "and to provide them with a constant evaluation of cost through in-progress estimates. Additionally, this method of cost accumulation will also tend to increase efficiency and reliability of estimating."

"At the start of the cost target program, I was dubious of its ultimate value," Vasques stated frankly. "But after seeing it in operation, I'm convinced. The designers have become cost conscious and now evaluate alternate designs for cost, as well as performance and reliability."

The cost target team cited the example of an engineer whose design called for use of a 14-pole, 5 amp., rotary switch. Faced with a cost of $86 for this item, he took a second look, successfully challenged the 5 amp. requirement, and found another switch to do the job as well for only $17.50.

"The program puts control of a product's cost where it belongs —in the design phase, prior to production release," Lepen said. "Obviously, if we can produce a quality product for less, we can improve our competitive position for future business."

Success of the cost target program on the transponder test set indicates that similar techniques may be applied to other GD/Astro projects in the future, and procedures developed on the current program are now being formalized toward that end.

'Do Good Work' Awards Earned

(Continued from Page 1)

Vandenberg, with presentation of special silver "C" pins to the 55 employees of MAB-5. The exclusive emblems were initiated as special recognition for employees in departments which are three-time Craftsmanship winners — a status achieved by MAB-5 as winners in April, May and June.

In the San Diego area phase of August competition, a Plant 19 group, major assembly (Dept. 758) under General Foreman Ray Kendall, received the monthly award, with President J. R. Dempsey, E. D. Bryant, vice president-operations, and L. R. Kiersey, chief, materiel quality branch (Plant 19), AFPRO, on hand for the presentation. The department's Quality Index has rocketed from 93.7 at the program's inception to 114.2 for August work.

Meanwhile, K. E. Newton, Astro operations director at Cape Kennedy (ETR) announced that units at the Florida site had entered Craftsmanship competition as of September. Participating are Complexes 12, 13, 14 and 36-A.

IDEA MEN—Pictured at OceanHouse after receiving GD/Astro Management Club "Man-of-the-Month" awards at September meeting are A. S. Stebbins, left, August award, P. E. Gelles, July citation, and O. E. Stewart, June honors. Award symbolizes top performance in Cost Improvement Proposal program.

Three Earn 'Men-of-the-Month' Awards From Astro Mgt. Club

"Men-of-the-Month" for June, July and August were honored at the Sept. 23 meeting of GD/Astronautics Management Club, as the organization resumed its monthly gatherings after a summer "vacation."

Cited for outstanding contributions to the division's Cost Improvement Proposal program during the months stated were O. E. Stewart, Dept. 143-5 (June); P. E. Gelles, Dept. 143-3 (July); and A. S. Stebbins, Dept. 454-0 (August). Each received an appropriately engraved plaque.

Stewart, a general supervisor, recommended that supplier evaluation requests be screened against information available at both Astronautics and other General Dynamics divisions, and was responsible, through his CIP, for establishment of a cooperative, inter-division data bank. First year savings are estimated at some $6,000.

Gelles' CIP was responsible for trimming costs of phenolic material by 50 per cent, through substitution of paper-backed for canvas-backed material previously used. He is a quality control engineer.

Stebbins, assistant foreman, is credited with estimated annual savings of $5,850 as result of his CIP recommendation of a change in the type of fiberglass cloth fabric used on pre-pregnated glass cloth laminates.

All Management Club members are eligible for the "Man-of-the-Month" award which goes to the member making the most significant contribution to the CIP program. Candidates each month are judged on the basis of combined dollar savings, total number of CIPs submitted and approved, and the ingenuity, originality and completeness of their proposals.

Old Globe Theatre Honors Astro Folk

Old Globe Theatre's 17th Annual Atlas Awards Presentation Sept. 19 featured a number of Astronautics folks much in the limelight.

Charles Boyd received an Atlas award for his portrayal of Adam Taylor in "Sunday in New York," in the "actor in a supporting role" category.

Jane Couchois, wife of William Couchois, won the Atlas for the "actress in a comedy role" for her work as The Woman, also in "Sunday in New York."

Nominated for awards were employees Al Wallen and Dan McLaughlin.

Key roles in staging the annual dinner fell to Mmes. William Randall Walker (co-chairman-coordination), Julian M. Benedict (nominee arrangements), R. Louis Cox (reservations), James C. Duffy (publicity), Charles L. McKnight (dinner seating) and Emory Thurston Jr. (entertainment).

Blood Credit Upped, Thanks to Engineers

Engineering departments supplied the donors Sept. 24 when the San Diego Blood Bank set up its mobile unit at GD/Astro.

Some 202 pints were collected, assuring an "in the black" status for Astro's credit until the next scheduled bloodmobile visit in early 1965.

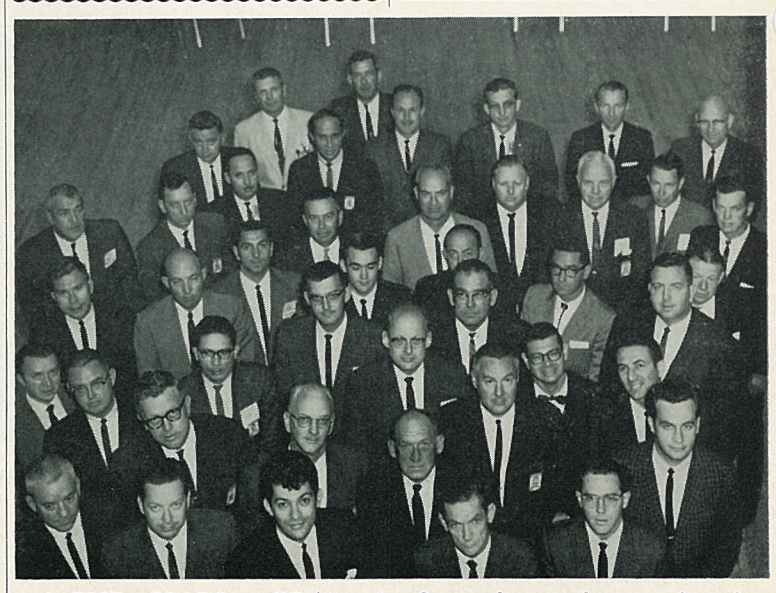
Blood donated is available to employees and their immediate families.

ARA Rockhounds To Seek Fire Opals

A trip to Mrs. Cowdon's Opal Mine at Red Rock Canyon Oct. 17 and 18 will highlight ARA Rockhound activities this month, with the group to gather at Jaw Bone Canyon Cafe, 20 miles north of Mojave.

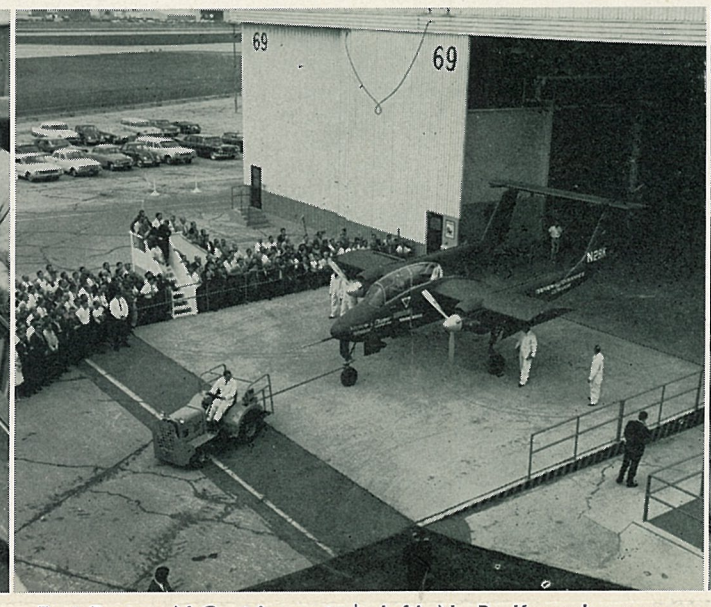
Leo Nowak will guide the assembled caravan to the mine campsite, where there will be a daily digging charge of 50 cents per adult. Participants should bring their own water and firewood, and a pick, sledge and bar.

George Halterman, field trip chairman, 444-5943 or ext. 4283 at Plant 71, will supply maps.



LATEST GRADS — GD/Astro's September value engineering seminar, in which men pictured took part, was seventh to be conducted by division in 1964. Two Stromberg-Carlson employees were numbered among participants.

ROLL-OUT CEREMONY—Roger Lewis, General Dynamics president, heralds fully-completed and ready-to-fly Model 48, Convair's new limited warfare craft, before a full house of military, governmental, civic officials, press, television, radio representatives at Sept. 29 "coming-out" ceremony in San Diego. Dignitaries introduced by Convair President J. H. Famme from speakers' stand were San Diego Mayor Frank Curran; Ernest White, IAM regional vice president; Vice Adm. Paul D. Stroop, Commanding Officer Naval Air Forces, Pacific Fleet; Maj. Gen. Fred Ascani, Deputy Commander, Research and Technology Division Element, Wright-Patterson AFB, Ohio; Maj. Gen. F. C. Tharin, Commanding General Marine Corps Air Bases West; Col. Lester Schockner from Army Aviation Command, Fort Rucker, Ala.; Lt. Col. C. W. Atterholt, Chief of SD Air Procurement District; Cdr. R. A. Evans, BUWEPSREP, San Diego. Convair executives on stand were W. W. Fox, director of engineering; James E. Fink, program manager of Model 48; C. W. Frick, vice president engineering; I. M. Laddon, GD director. In rear of stand Convair engineering specialists were stationed to answer technical questions of guests. Directly in front are few of wide range of weapons—bombs, rocket pods, missiles—aircraft can carry.



ONCE-OVER—Col. L. L. Evers, Army Special Forces, Fort Bragg, N.C., tries out cockpit of Convair's new COIN craft with assistance of Convair Chief Test Pilot John Knebel after Sept. 29 formal ceremony when visitors had a chance to inspect plane. At far right are four Convair men who had vital roles in culmination of project, (from left) N. R. Keough, manager of engineering prototype facility; J. E. Fink, COIN program manager; J. M. Adamson, director of design development; James Wainwright, in charge of engineering design. Center shot shows pull-out of Model 48 from prototype facility as climax to unveiling ceremony.

Convair's COIN, an Off-the-Shelf Aircraft, Unveiled Before 4,000

First flight of General Dynamics/Convair's new multi-mission airplane, Model 48, is due any day, coming close on the heels of the unveiling of the limited warfare airplane at roll-out ceremonies last week (Sept. 29) at the San Diego plant.

The new plane, which will be able to perform armed reconnaissance, counter-insurgency (COIN) operations, surveillance and observation, transport, and other close-support missions, will then be prepared for an extensive 100-hour flight test program to prove its sturdiness. Convair's Chief Test Pilot John Knebel, who has been at the controls of every Convair model from the XFY-1 "Pogo" to the latest 990 jet transport, will test flight the new plane.

About 4,000 spectators, including high-ranking officers from each branch of the military service, saw the twin-boom, high-tail Model 48 roll out of its production hangar. Two men, unassisted, later pulled the airplane into position for a demonstration of the extra-large flaps on the trailing edge of the wing that help give the airplane its STOL (slow take-off and landing) capability.

At the rollout ceremony, Roger Lewis, president of General Dynamics, said the company has long recognized the growing need for a rugged, low-cost, highly maneuverable aircraft that could be deployed and easily maintained in forward combat areas. Preliminary design and development of the Model 48 were started more than two years ago.

"We decided to proceed directly with a prototype airplane, at the same time we submitted our technical proposal to the Bureau of Navy Weapons," Lewis said. "We saw a definite requirement for this type of aircraft and wanted to have a flying, off-the-shelf article ready for any limited-war emergency."

"Under an accelerated program," he said, "General Dynamics could deliver 156 fully-tested, combat-ready airplane within 24 months after go-ahead."

The president of Convair division, J. H. Famme, explained that although the Model 48 is a prototype, "the division has made every effort to build it as a production airplane on the first try so that no major redesign would be necessary for volume production."

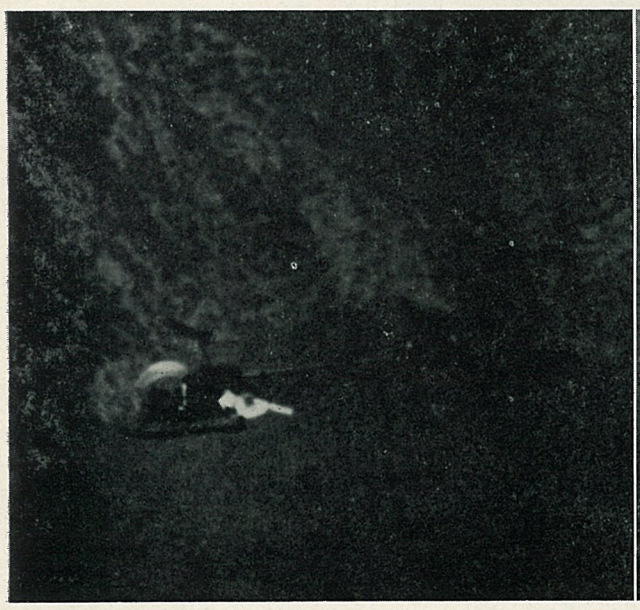
Construction of the company-funded prototype took less than six months, including engineering, tooling and fabrication. The Model 48 meets or exceeds all requirements set forth in the Navy request.

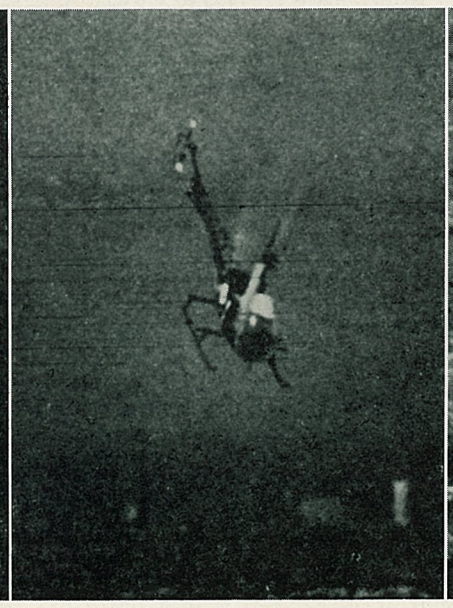
Famme said the airplane will be able to operate from rough unprepared fields and take off with a ground run of only 225 feet. Fully loaded for an armed reconnaissance mission, the aircraft will be able to take off and clear a 50-foot obstacle in less than 500 feet. The Model 48 also could operate from an aircraft carrier unaided by catapults or arresting hooks and can be converted for amphibious operation.

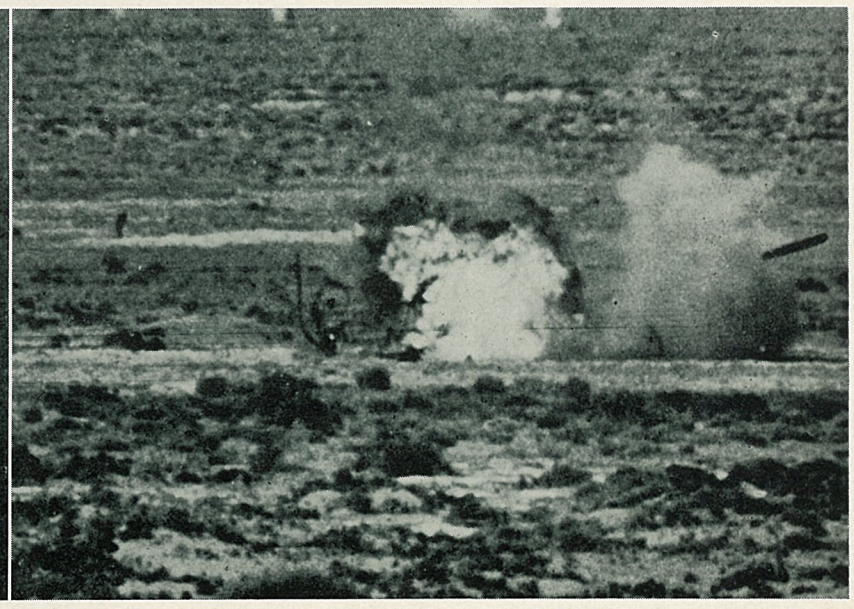
"In addition to its basic combat mission," Famme said, "the Model 48 has been designed to carry out a wide range of secondary utility missions without compromising its combat capabilities. As a paratroop transport, the Model 48 will accommodate six fully-equipped jumpers in the basic fuselage bay. As a cargo carrier, the airplane will carry 2,000 pounds of supplies. In the photo-reconnaissance role, up to 2,000 pounds of photographic or other sensor gear can be carried."

Model 48 armament consists of four 7.62-mm machine guns—two guns being pod-mounted on each side of the fuselage. Ordnance includes a wide range of bombs, rocket pods, missiles, guns.

Redeye Missiles Shoot Down Helicopter and Target Drone







DIRECT HIT — Redeye, world's smallest guided missile, scored direct hit on helicopter in Sept. 24 demonstration at U. S. Naval Ordnance Test Station, China Lake. Heat-seeking missile streaked through helicopter which burst into flames and crashed. Demonstration was witnessed by scores of military and press spectators.

MENU MAKERS—Prophet Co. cafeterias serving General Dynamics will feature 45th anniversary meal Oct. 22 with full dinner for only 45 cents, plus tax. Bill Rickman, left, district supervisor, goes over menu with cafeteria managers, from left, Jack Malone (Convair), Charles Borgatta (Plant 19) and Gil Hutter (Astro). GD/Pomona cafeteria will be included in special.

Special 45c Anniversary Meal Will Mark Prophet Birthday

On Oct. 22 Prophet Co. celebrates its 45th anniversary as a food service organization and Bill Rickman, district manager, has invited all General Dynamics employees to join in the observance.

It should be a memorable occasion, since the price of a special meal to be featured in all Prophet Co. cafeterias will be in keeping with those prevailing when Prophet Co. began operations 45 years ago.

The cost: 45 cents, plus tax!

Diners will enjoy roast turkey and dressing, potatoes, peas, giblet gravy, cranberry sauce, tossed green salad, dinner roll with butter, drink, and a piece of a special anniversary cake.

Taking part in the nation-wide event will be General Dynamics cafeterias at Astronautics (Plants 71 and 19 and Sycamore Canyon), Convair and Pomona. Both first and second shift lunch periods will feature the meal, where applicable.

Five Junior Teams From Astro Shoot In So. Cal. Tourney

Five Astro Rifleers teams took part in the Southern California Junior Rifle League tournament Sept. 26 at Del Monte, and although new shooting conditions were confronted, good showings are expected when final standings are known.

Shooters were Richard Ellis and John Tramposh, Team 1; Terrence and David Farrelly Jr., Team 2; Robert Eaton and Bill Crosthwaite, Team 3; Peggy Bolton and Shelley McGregor, Team 4; Douglas Andrews and Susan McKee, Team 5.

For most of the General Dynamics contestants, the tourney was the first time shooting a 100-yard range, first all-prone match, and first try at 50-meter range.

They were coached by Dave and Laura Farrelly, Ivus Ellis, Ed Eaton and Bob Andrews.

This Saturday (Oct. 10), two other Rifleers, Kathey and Kevin Schindler, will compete in a registered NRA meet, the shoot-off of Pacific Beach Summer League. The event will qualify them for NRA classification.

Bob McGregor of GD/Convair is Rifleers leader, with Martin Miller, also Convair, the chief instructor.

Classes Under Way In Boat Handling

General Dynamics employees in the San Diego area still have time to join special classes in small boat handling offered free under the sponsorship of the U. S. Power Squadrons.

Classes are now meeting at 7:30 p.m. on Tuesday at Sweetwater High School (National City) and Wednesday at both Cabrillo School (Pt. Loma) and the U. S. Naval Amphibious Base (Coronado). Information is available by calling 222-1183 or 222-1719.

ROAD RUNNERS CANCEL MEETING

Convair Road Runners have cancelled their Oct. 17 meeting since it conflicts with the dates for the annual Del Mar trailerite rally (Oct. 15-18). The CRA group is making plans to enter its prize-winning mobile road runner unit in the Border District Rally of Travel Trailer Clubs of America. Carl Scholl, club president, is taking on chores of wagonmaster for the local club.

Early Entries Urged For NMA Area Golf Tourney Nov. 21-22

Golfers of all three General Dynamics Management Clubs in San Diego have a chance to get preferred spots in the first annual golf tournament held by the NMA San Diego Area Council, if they enter now.

The 18-hole medal play tourney will be Nov. 21 and 22 at Cottonwood Country Club. At least 200 linksmen from the Area Council's seven management clubs will compete. All present and past members of Astronautics, Convair, and GD/E groups are eligible.

Starting times and days will be assigned in the order entries are received up to the Nov. 6 deadline. Foursomes, threesomes, or twosomes are asked to enter on one entry blank, as printed below, and send entries to the division representative handling golf entries: Astro—D. K. Stites, Plant 71, ext. 2340, Zone 644-00; Convair — Terry Kell, Plant 1, ext. 605, Zone 423-00; GD/E—Ernie Paul, Stromberg-Carlson, Hancock St., ext. 2193.

Fee is $7.50 per person, which includes $2.50 entry charge and $5 greens fees.

ENTRY FORM

Preferred day and starting time: Saturday..... or Sunday.....

	Participants' Names	Address	Phone	Hdcp.	Company
1.					
2.					
3.					
4.					

Convair and Astro Salvage Hours Set

GD people in San Diego will have a chance to shop at Convair and Astro salvage yards the four coming Saturdays of this month. Schedule is:

Convair—Oct. 10, 24.

Astro—Oct. 17, 31.

Sales hours are from 8 a.m. until noon at both locations.

GD Men Active In Seminar Plan

General Dynamics activities in San Diego will be included on the agenda of a West Coast Research Seminar to be sponsored by Office of Naval Research, Oct. 19-30.

More than 100 Navy, Air Force and Army Reserve officers in military and civilian research fields from throughout the nation will attend the event, which is hosted by Naval Research Reserve Company 11-5 in San Diego.

Prominent in seminar planning are R. D. Tuttle, Astro Dept. 834 (Cdr., USNR), who serves as general chairman; R. D. Bradshaw, Dept. 529 (LCdr.), deputy chairman; A. J. Owens, Dept. 590 (LCdr.), Astro session chairman; Arthur Hunt, Dept. 952 (Lt.), assistant to the deputy chairman.

On Oct. 20 a full day's program will center on GD/Astro and presentations by Karel Bossart, technical director; Frank X. Marshall, manager Centaur engineering program office; Dr. Terrence Gooding, senior staff scientist; and Kraft Ehricke, director of advanced studies.

Col. M. K. Andresen, Astro AFPR, and Vice President W. H. Patterson, will welcome seminar participants. The program includes tours of Plant 71 and Sycamore Canyon.

Coordination of the Astro visit on behalf of President J. R. Dempsey and Vice President Mort Rosenbaum, has involved assistance of P. D. Ferrara, chief administrative engineer; D. H. McCoy, and R. T. Blair Jr., manager of community relations, working with the Naval Reserve group.

Included among seminar attendees will be two Astro AFEWI personnel, Capts. R. L. Bulmer and D. F. Chilbert.

On Oct. 27, Nathan L. Wener, GD/Convair Dept. 6 (LCdr., USNR) will serve as chairman of a session including presentations by Convair's Alan C. Conolly, senior hydrodynamics engineer; K. G. Hart, chief of dynamics; D. B. Dewey Jr., hydrodynamics engineer; and R. F. Devereux, oceanography project manager.

A session Oct. 29 will deal with nuclear science, as the seminar group visits General Atomic for a program chaired by Charles B. Wagner (Cdr., USNR) and tours that division's facilities.

HUNDRED ATTEND BUSINESS CLASSES

Over 100 General Dynamics people, intent on increasing their knowledge of modern business methods, filled six courses offered for the first time in-plant under a new Business Systems Management program.

The program, which leads to a professional designation, has been set up by GD/Astronautics and GD/Convair educational services in cooperation with University of California Extension (**GD/NEWS**, Sept. 9, 1964).

Each of the six classes in new business technology has an enrollment of between 15 and 20. Registration closed Oct. 2.

Classes at Astro's Plant 71 are: Business Data Processing with Unit Record Systems, John Spillman, instructor; two classes in Data Processing and Computer Programming, both taught by Gerald Myers; Electronic Data Processing Economics and Feasibility Studies, and Systems and Procedures, Charles Twohey, instructor of both.

Mike Dascenzo is instructing Electronic Data Processing Economics and Feasibility Studies at Convair, Plant 1.

Centaur Project Takes Reins Of Astronautics Test Sites

Management responsibility for the operation of GD/Astronautics' two oldest test sites — Point Loma and Sycamore Canyon — shifted this week to the Centaur project organization.

President J. R. Dempsey announced the change.

At present, about 98 per cent of the test loads being carried out at the two sites are in direct support of Centaur development or other programs Astronautics is performing for the National Aeronautics and Space Administration (NASA).

Under the new arrangement, NASA's resident office at Astro, headed by Ronald Rovenger, will exercise all required governmental control over the site operations.

"This shift in management responsibility has been worked out in close coordination with the Astronautics Air Force Plant Representative," Rovenger said. "It is a mutual effort affording maximum utilization of existing facilities at the lowest possible cost."

Rovenger added both sites will remain available at all times to carry out direct test support of all Astronautics defense and space efforts. The Air Force will continue to support test operations as in the past.

J. S. Harrison, Centaur manager of test operations, will be directly responsible for both sites. Chief of NASA resident office operations is Lt. Col. Joe E. Heatherly.

Both Col. Heatherly and Harrison approved the administrative shift.

"We will be better prepared to respond quickly to rapidly changing situations," Col. Heatherly said. "And we can now switch existing facilities and personnel about with minimum adverse results," Harrison added.

Astro currently has about 200 employees on hand at each of the two sites, although totals may fluctuate with tests in progress. Fred Wallace Jr. heads the Point Loma work force, while H. M. Brown is test conductor at Sycamore Canyon.

Sycamore Canyon's Stand 4 is presently the only point where "hot" Centaur engine runs are made. A "battleship" Centaur tank there is utilized for a wide variety of development and verification systems tests, etc.

Extensive test equipment at Point Loma is utilized for many types of structural, cryogenic, environment, separation and component system tests.

Unaffected by the management responsibility shifts is the General Dynamics Test Site adjacent to Sycamore Canyon.

Keglers Signing For Tourney

General Dynamics keglers have until the end of this month to sign for the annual Industrial Recreation Council bowling tournament, set for Nov. 7-8 at Pacific Recreation.

Mike Brooks, co-commissioner of CRA bowling and chairman of the IRC tourney, said that all GD people in San Diego are eligible to enter. Deadline is Oct. 30.

Five-man teams will compete in three divisions: men, women, and mixed. Individual trophies will go to high game and high series in each division. Winning teams also receive trophies. An awards dinner will honor winners the week following the tournament.

Last year's book averages will be used for handicaps, with 850 set for maximum team average. Entry fee is $16 per team, to be paid at time of entry.

Entry forms are available at Astro, Convair, GD/E employee services and may be turned into respective employee services outlets or to Brooks. Brooks may be reached at his home phone, 469-8793, for information.

STANLEY ROGERS FILLS TWO SOCIETY POSTS

Stanley Rogers, GD/Astro Dept. 590-0, has been named publications chairman of American Federation of Information Processing Societies, sponsor of annual spring and fall "Joint Computer Conferences." Rogers additionally serves as national secretary of Simulation Councils, and is publisher of this body's monthly "Simulation."

ON THE JOB — Pictured with President J. R. Dempsey are September graduates of Astro industrial management training program, from left, J. B. Butterworth, S. D. Royer, W. M. Cott, R. G. Rosen, K. H. Griesbaum, J. M. Miller, J. T. Lane, C. J. Southgate. All have now received regular assignment to GD/Astro departments.

Eight Complete Their Training In Industrial Management

Certificates of completion were presented by President J. R. Dempsey last month to the third group of young men to complete Astronautics' industrial management training program.

Graduates are J. B. Butterworth, W. M. Cott, K. H. Griesbaum, J. T. Lane, J. M. Miller, R. G. Rosen, S. D. Royer, C. J. Southgate.

After completing a two-year program in which all were assigned for periods of three to six months to various division administrative departments, all have now received full-time work assignments.

Butterworth is with division systems, Cott with SLV contracts, Griesbaum with Centaur contracts, Lane with controller's function, Miller and Southgate with configuration management, Rosen with industrial relations, Royer with contracts.

In the course of their training, program participants performed actual tasks in departments to which they were temporarily assigned, according to training outlines prepared by their host department. At the completion of each assignment they were evaluated by the appropriate manager and director.

The program just completed was conducted by management systems. A new group of trainees will participate in the program which is now under sponsorship of industrial relations (**GD/NEWS**, Aug. 12).

'New Year's Eve' Dance Set Oct. 17

Repeat of a last year's "winner"—an ARA-sponsored "New Year's Eve in October" dance—will be held Oct. 17, 8:30 to 1, in El Cortez Hotel's Caribbean Room, with tickets at $1 per person now available at employee services outlets.

The event, featuring Buster Carlson's Astro band, will include all the traditional revelry, with free hats, horns and noisemakers for all.

Proceeds will benefit an Astro Wives Club scholarship to be granted a needy teen-ager.

Reserved tables for groups of 10 or more persons may be arranged through ticket outlets. Ticket sales will be limited to 600.

ARA Calendar

(GD/Astronautics Recreation Association has some 40 activities in operation for employees. For information, call ARA Headquarters, ext. 1111).

★

AMATEUR RADIO — Next meeting scheduled 7:30 p.m., Oct. 28, ARA Clubhouse.

BASKETBALL—Varsity team tryouts, 6:50 p.m., Oct. 13 and 15, Muni Gym, Balboa Park.

CHESS—Club meets for play on Mondays, 7:30 p.m., ARA Clubhouse.

COINEERS — Meeting 7:30 p.m., Oct. 21, ARA Clubhouse. Topic: commemoratives.

EXPLORERS — Meeting 7:30 p.m., Oct. 21, ARA Clubhouse. In-Ko-Pah field trip, Oct. 24, 25.

GUNS—Registered skeet shoot Oct. 18, Gillespie Field Range.

HI-FI/MUSIC — Meeting and demonstration, 8 p.m., Oct. 13, ARA Clubhouse.

JUNIOR RIFLEERS — Regular shoot Oct. 17, CRA Range.

ORGAN CLUB — Meets 7:30 p.m., Oct. 20, ARA Clubhouse.

PISTOL — Matches, 9:15 a.m., Oct. 11, San Diego Police Pistol Range.

RIDING — Instruction offered weekly in ARA Area, 8 lessons for $15. Register at employee services office.

ROCKHOUNDS—Trip to opal mine, Oct. 17. Info: George Halterman, 444-5943, or ext. 4283.

SNOW SKI — Season opens with meeting, 7:30 p.m., today (Oct. 7), ARA Clubhous.e

TRAILERS—Weekend at Big Oak Ranch, Oct. 10, 11. Info: Fred Schofield, ext. 2694.

WIVES CLUB—Special membership tea, 1 p.m., today (Oct. 7), ARA Clubhouse. All Astro wives welcome.

September Bridge Winners Reported

Wayne and Billie Evans were north-south winners, while Tony and Jody Miller won east-west in special Master Point play conducted Sept. 25 by ARA Bridge Club.

Winners on other club play nights throughout the month were: Sept. 4, Gene Alford and Dick Bonsignore (N-S), Bernhard Blutinger and Merlin Clute (E-W); Sept. 11, Freddie Combs and Francys Darr, Mari Hoffman and Bob Combs (N-S tie), Phylis Walsh and Bob Rustad (E-W); Sept. 18, Mitzi Rustad and Gene Alford (N-S), Ceil McCullough and Bob Rustad (E-W).

'Shot in the Dark' Disount Available

Money-saving exchange tickets for "A Shot in the Dark," playing at Cinema 21 in Mission Valley are now available to GD/Astro employees through employee services outlets.

The free coupons permit a 59 cent discount for evening showings Sundays through Thursdays and at all matinees, when purchasing tickets at the theater box office. "Shot" will play throughout the month.

REAL HUCKSTERS—Astro Wives Club has set goal of $250 for scholarship for needy child attending annual Christmas party. Various means will be utilized to raise funds, including sales (at monthly meetings) of craft items like those displayed above by Mmes. Jack Jones, W. V. Ohland and Richard Besse. Annual card party at ARA Clubhouse Oct. 24 will find these and other items available.

Astro Wives Club to Establish Special $250 Scholarship Fund

Astro Wives Club has set itself an ambitious, and noteworthy, goal—to raise $250 before early December!

The money will go into a special fund to provide a scholarship for one of the needy children attending the annual children's Christmas party staged by Con-Trib-Club, the Salvation Army, and ARA.

Georgia Hatfield, president, explained:

"We think the Club can do a real service by providing this scholarship to a youngster who may not be able to continue his or her education. We realize the time is short and we will have to depend on dimes and quarters and dollars to reach our goal, but we are going to try."

Wives Club members have set up some fund-raising ideas and are seeking still more. For instance, a Tupperware party last month brought in some money (10% on items sold); a $50 donation will be made by a national silver company after wives gather at ARA Clubhouse Oct. 29 (1:30 to 3 p.m.) to help select silver patterns; there will also be sales at monthly meetings of craft items (soap, sachets, etc.) and used jewelry.

One of the biggest events currently planned is an Oct. 23 (8 p.m.) card party at ARA Clubhouse. Guests will donate $1 and vie for prizes, etc., after playing bridge, canasta, scrabble, etc. Although craft items will be sold at this affair to raise scholarship funds, regular donations will go to already-committed plans to buy gifts for children attending the Christmas party. Tickets for this event are currently on sale at employee services outlets.

Groups desiring tickets may call 264-1013.

Coineers Slate Talk On Commemoratives

Next meeting of Astro Coineers, 7:30 p.m., Oct. 21 in ARA Clubhouse, will feature commemoratives, with a talk by ARA Commissioner Vince Bacon on "Introduction to Commemorative Coins" on the agenda.

A free coin will go to all attending.

The club will also participate in the annual Coin-A-Rama sponsored by all San Diego coin clubs at El Cortez Convention Center, Oct. 16-18.

Travelers Pointing To Big Oak Ranch

Astro Travelers, ARA trailer club, will weekend Oct. 10 and 11 at Big Oak Ranch, southeast of El Cajon, where activities will include swimming, dancing and a visit to "Western Town."

Trailer enthusiasts and their families among GD/Astro employees are welcome to participate, and may also attend club business meetings at 7:30 p.m., first Tuesday of each month in ARA Clubhouse.

Astro Rockets Tied For League Lead

A 3-0 record has tied Astro Rockets for the lead in San Diego Slow Pitch Softball League, with wins over Beer Barrel Allstars (4-3), Montgomery-Ward (11-5), and Good Shepherd Lutheran (26-6) to their credit.

Play continues through this month with Friday night games at Golden Hill playground. On Oct. 9, Astro meets The Terrible Ten at 8:30 p.m., and Oct. 16, NEL at 7:30 p.m.

Demonstration Stars New Lamp Speakers

Mel Trabold, Jim Lee and Jack Griffin, Acoustica Associates' representatives at GD/Astro, will demonstrate an innovation in high fidelity equipment at the meeting of ARA Hi-Fi/Music Club, 8 p.m., Oct. 13 in ARA Clubhouse.

Program subject is Acoustica's Omnisonic speaker system — to all appearances an attractive lamp, the shade of which is an electrostatic speaker and whose base conceals a six-inch "woofer." A pair of speakers will be coupled with a new, integrated all-transistor tuner/amplifier for the demonstration.

The Omnisonic system will be compared with the club's installed system, and a question period will be provided.

Al Schindler Wins Twice With Pistols

Al Schindler won both master class of a .22 Police Course match and a .45 Short National event fired Sept. 27 by members of ARA Pistol Club at San Diego Police Pistol Range.

In the .22 contest, Schindler topped Warren Ranscht, 299 to 297, while Carl Jensen was expert class winner over Lee Messerli, 290-286. Bill Worthington, with 265, won sharpshooter bracket over Byron Clapper with 261.

Scores in the .45 meet were: Schindler, 285; Ralph Sanderlin, 271; J. S. Knutson, 256; Ronald Schneider, 246.

RADIO FANS TO VISIT MIRAMAR NAS TONIGHT

ARA Amateur Radio Club will substitute a tour of the traffic control tower and radar facilities at Miramar NAS, north of Plant 71 on Hwy. 395, tonight (Oct. 7), for their regular Oct. 14 meeting. Assembly will be at the Miramar security building at 6:30 p.m. Dinner, previously planned, will not be served.

Sports & Recreation

ARA Snow Ski Club Kicks Off New Season at Meeting Tonight

Here's a sure sign winter is just around the corner — Astro Snow Ski Club members are gathering for their initial meeting of a new season.

It comes off at 7:30 tonight (Oct. 7) at ARA Clubhouse.

Astro's snow lovers annually plan their activities in keeping with the calendar and, more importantly, the presence of snow in their favorite haunts in California's high country.

Tonight they will map out plans for the coming season, elect officers, talk of possible trips, welcome old and new members and generally get acquainted. (Last year they enjoyed eight special trips including visits to Big Bear, Mammoth and Squaw Valley in California and one farther afield to Aspen, Colo.)

Planned group trips will include reservations and transportation, either in private cars on the "share-the-ride" plan or charter buses. The club has available ski racks, movies to instruct beginning and intermediate skiers and other equipment. And there are always opportunities for discount rates on ski clothing and equipment.

Charles A. Hill, president, indicates the welcome mat will be out tonight and the first Wednesday of each month (regular meeting night) as the group plans for weekends ahead.

Werbner, Panos Place One, Two In Chess Meet

Arthur Werbner, Dept. 958-6, has been crowned Astro's plant chess champion of 1964 at conclusion of a two-section tournament sponsored by ARA Chess Club.

For championship play, entrants were divided into two classes, with Class A (stronger players) playing a round-robin tourney, while a Swiss-style meet was held for Class B players.

A play-off between winners of class tournaments determined the championship.

Facing Werbner in the final contest was Nick Panos, Dept. 527-3, winner of Class B competition. S. A. Daniels, Dept. 158-1, had previously yielded to Werbner in a tie-breaking game for Class A honors.

Both Werbner and Panos received appropriately inscribed chess clocks for their performances.

Class A players and tourney won-lost records were Werbner, 5-1; Daniels, 5-1; Art Munson, 4-2; Jack Horning, 3-3; "Mickey" Schwartz, 3-3.

Standings in Class B listed Panos, 4½-½; N. C. Lonsdale, 4-1; Ken Jones, 4-1; Jim Thompson, 3-2; D. Cochrane, 2½-2½; Bud Fagan, 2-3; H. D. Jeter, 1½-3½; Steve Balogh, 1-4; H. A. Rosenthal, 1-4; R. Goodin, 1-4; R. L. Gilbert, ½-4½; Cleve Leonard, 0-5.

NEW CHAMP — Plant chess champion for 1964 is Arthur Werbner, Dept. 958-6, last year's runner-up, who downed Nick Panos, Dept. 527-3, for title. Werbner won Class A round-robin tourney, and Panos Class B Swiss-style series, prior to play-off.

TRYOUTS IN OFFING FOR HOOP BILLETS

Tryouts for this year's Astro representative basketball team will be held at Municipal Gymnasium, Balboa Park, at 6:50 p.m., Oct. 13 and 15.

The team will compete in the newly-organized Greater San Diego Basketball League, comprised of the four top civilian teams in the area, plus three leading service teams. Astro's home games will be played at El Cajon High School gym.

Last year the Astro "A" team had a 36-7 record, taking the pre-season championship and second place in season play in San Diego Municipal Basketball League, and coming down to the wire in the Southern California Municipal Federation meet where it dropped a single-point "squeaker" to GD/Pomona.

Luncheon Planned At 'Mexican Village'

Regular monthly luncheon meeting of Astro Wives Club will be held Oct. 21 at Mexican Village, Coronado, with the club's annual "crazy hat" contest to be judged by ARA's Ray Mendoza, Rich John and President L. F. Moeller.

Hostesses are Mmes. J. D. Jones, W. T. Umberger and G. Van Zen. Reservations will be accepted until 5 p.m., Oct. 19 by Mrs. Richard Besse, 274-0512 or 273-2757.

On Oct. 28 the group will hold its monthly potluck luncheon meeting at 10:30 a.m. at ARA Clubhouse, with husbands and guests invited to join the wives for lunch at noon. Mrs. R. L. Weaver will demonstrate making waste baskets and pencil holders.

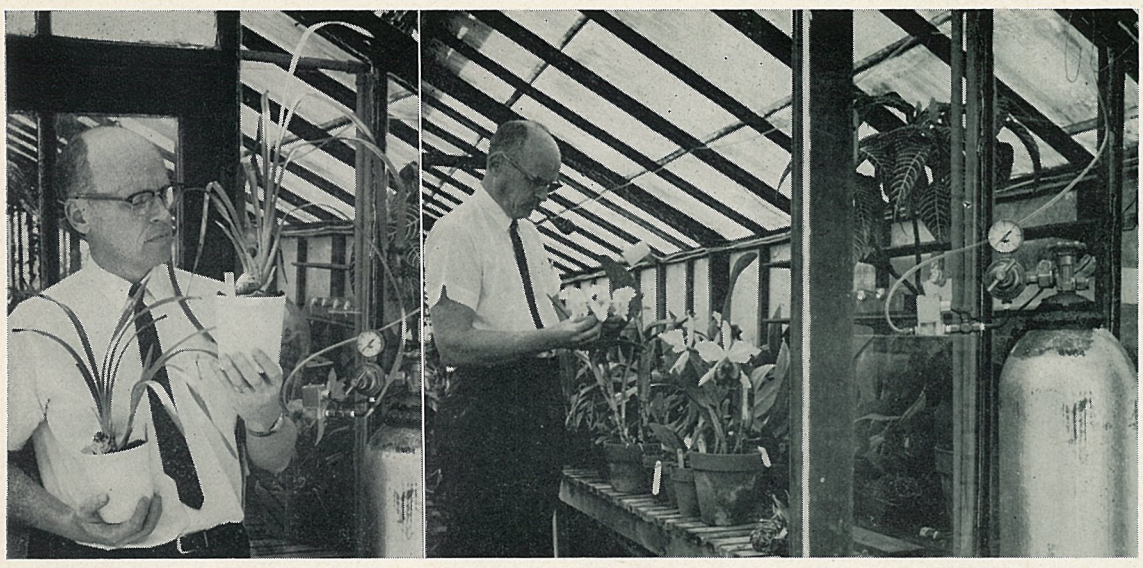
Tickets for a Nov. 4 bus trip to Hollywood are now available for $6, with reservations accepted by Mrs. W. V. Ohland, 442-5714.

Explorers to Host Mountaineer Moore

Mountaineer Jim Moore will be featured speaker at the meeting of ARA Explorers Club, 7:30 p.m., Oct. 21 in ARA Clubhouse, including a slide show and equipment demonstration in his presentation.

On Oct. 24-25, the club will offer a special trip into the In-Ko-Pah Gorge area near Jacumba, led by Roy M. Kepner Jr., County Department of Natural Resources, and Roy Hampson, Weed and Rodent Division, Department of Agriculture.

Details of the outing will be announced later, but the option of one- or two-day participation will be offered. The trek will include a hike through the area seeking Indian artifacts and hidden palm valleys.



SPEED-UP—C. L. Hartshorn of Astronautics, orchid grower in his leisure time, is shown in his greenhouse equipped with Liquid Carbonic CO_2 system which speeds growth spectacularly. In photo at left Hartshorn is looking directly at Cymbidium that was grown under these conditions. In other hand he holds Cymbidium that was planted four months earlier, under normal conditions. CO_2 is piped into greenhouse in plastic tubing and enters atmosphere through tiny holes in plastic.

Phenomenal!

'Instant Orchids'—Well, Almost—Produced With CO2 System

A General Dynamics man, C. L. "Larry" Hartshorn, chief plant engineer at Astronautics division, has one of the first greenhouse installations of Liquid Carbonic's CO_2 system on the West Coast.

An avid "after hours" orchid grower, Hartshorn equipped one of three greenhouses he maintains at his Escondido, Calif., home with CO_2 last June.

He describes the results as "phenomenal!"

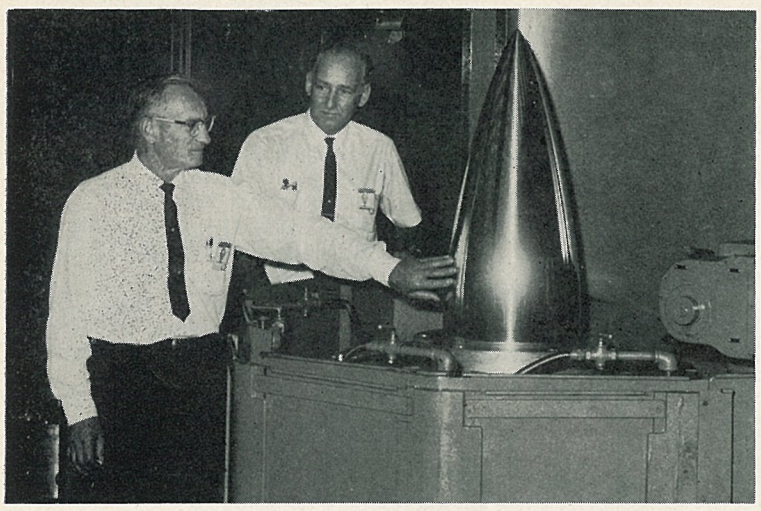
Hartshorn uses the tube distribution system in his 9 by 30-foot greenhouse, where a single CO_2 cylinder feeds in gas at 0.25 cu. ft. per hour from 7 a.m. to 6 p.m. daily. Concentration is maintained at about 500 ppm, and Hartshorn said a gas cylinder normally lasts about a month.

"While orchids are normally extremely slow-growing," he explained, "since I put in the CO_2 system, growth has been obvious."

To demonstrate, he displayed some 100 plants — two-inch seedlings in June — which have already shown considerable foliage and root growth. A random sample of five larger plants which had five-inch leaves when the CO_2 system was installed now have new leaves 8 to 8½-inches long.

Other orchid plants, in two-inch pots since 1962, have required repotting since exposure to the CO_2 concentration. Hartshorn explained that the usual procedure called for moving them into pots one size larger, but with several of the plants in question, growth was so extensive it was necessary to "skip" sizes in repotting.

The CO_2 system has seen widespread acceptance from commercial growers throughout the Mid-West, he said, and on the West Coast is being used for orchids by large commercial growers in both Los Angeles and Goleta, Calif., and by growers in Solana Beach.



NEW CAPABILITY — Leo J. Enfield, GD/Pomona machine shop general foreman, and Harvey Goodwin, tool engineering supervisor, examine "just completed" master radome pattern while still on a tape controlled Bullard four-axis vertical lathe. Pattern demonstrates contouring capabilities of Bullard, one of the newer machines assigned to numerical control section at GD/Pomona.

Lewis Emmerich, Now of GD/Electronics, Named Director of Ship Conversion Task

Representatives of the U. S. Navy, National Aeronautics and Space Administration and the U. S. Air Force met in Rochester, N. Y., last month with General Dynamics representatives for preliminary planning following award of a $65 million "Range Instrumentation Ships" contract (**GD/NEWS**, Sept. 23, 1964).

Work involves conversion of three Navy tankers to become sea-going tracking ships for the Apollo program.

Conferees were welcomed by R. A. Wilson, president of Electronics division. They included Capt. A. F. Hancock, project officer, Bureau of Ships; Capt. H. A. Jackson, supervisor of ships, Groton, Conn.; Capt. H. H. Hickman, Inspector of Navy Material, Buffalo; Robert McCaffery of NASA; Lt. Col. W. T. Martin of USAF; Robert Laney, Electric Boat, manager of the Quincy Yard where the ships will be converted.

Lew Emmerich

Lewis Emmerich, formerly of Astronautics division and now Electronics division R.I.S. program director, described the operating organization for the project to insure satisfactory liaison between the General Dynamics divisions and the governmental agencies involved.

Emmerich, whose appointment was announced recently by S. L. Ackerman, GD/E vice president, will make his headquarters at Quincy.

'Breakthrough' For Gardeners

A major "breakthrough" in greenhouse gardening has been achieved by Liquid Carbonic division with a unique system for positive control of the atmospheric concentration of carbon dioxide.

Broadly speaking, carbon dioxide (CO_2) is to plants what oxygen is to animals: through photosynthesis, plants combine CO_2 and water plus the energy of sunlight into the complex compounds needed for growth.

The atmosphere normally contains only a tiny quantity of CO_2 — about 250-330 parts per million. If this proportion is reduced to about 220 ppm, plant growth slows. When the level falls to 150 ppm, some plants simply stop growing.

In greenhouses — essential for year-around production in many parts of the country, and used to provide specialized environments for certain plants even in more temperate climates — CO_2 concentration tends to drop as plants absorb the gas naturally present in the atmosphere.

Liquid Carbonic has devised a proven, low-cost means of replacing this CO_2 depletion, and in the same manner, building the concentration to 500-550 ppm to accelerate growth.

One method calls for suspending lightweight plastic tubing along the greenhouse roof. This is connected, via a flowmeter and timer, to a CO_2 supply — either LC's "Liquiflow" storage vessel or dry ice converter. Gaseous CO_2 feeds into the atmosphere at a controlled rate through tiny holes punched in the tubing.

An alternate technique involves releasing CO_2 directly below existing overhead fan units, which mix it evenly into the air throughout the greenhouse.

Plants grown with a controlled CO_2 concentration (up to 550 ppm) show increased yield, quality and market value.

Bibb lettuce, for example, showed a 40 per cent crop increase with CO_2; tomato crops shot up 29 per cent. Carnation yields increased over 30 per cent, and, even more significantly, flowered up to two weeks earlier. Roses improved markedly in blossom quality, number and yield (39.7 per cent average), plants produced more flowers with 20 and 30-inch stems.

Besides the uniform growth which results from controlled CO_2 concentration, it lets greenhouse growers in colder climates trim winter heating costs, since ventilation from cold, outside air, is no longer needed to replace CO_2 absorbed by the growing plants.

MILLING ELECTED BY INSTITUTE

John D. Milling, GD/Convair controller, has been elected to membership in the Financial Executives Institute, an organization of top corporate financial management people in the United States, Canada, Puerto Rico. Milling will be affiliated with the Los Angeles Chapter.

Atomic Named In Power Plan

The U. S. Atomic Energy Commission has accepted, as a basis for negotiations, a proposal to build an advanced high temperature gas-cooled reactor (HTGR) nuclear power station of 260,000 kilowatts electrical generating capacity on the system of the Rochester, N. Y., Gas and Electric Corp.

The plant is expected to be constructed on the south shore of Lake Ontario about 19 miles east of Rochester.

The AEC announced that a memorandum of understanding for a cooperative government-industry arrangement will be negotiated. General Atomic which developed the HTGR nuclear power system, will furnish the entire power system and its nuclear fuel as the prime contractor.

The AEC said the memorandum of understanding will serve as a basis for seeking Congressional authorization and funding.

DIVISIONS SEND REPS TO FLORIDA

Representatives of two General Dynamics divisions were on hand at Orlando, Fla., Sept. 29 through Oct. 2 to take part in the Seventh Annual Air Force Institute of Technology (AFIT) "Education With Industry" Management Symposium.

Astronautics' E. W. Thurston Jr., education services coordinator, took part along with Capts. Ronald Bulmer and Dominic Chilbert, now assigned to Astro for AFIT training.

From GD/Fort Worth, J. H. Payne, executive development administrator, attended, along with Majs. James Hicks Jr. and Robert Pait, and Capt. Lester Raymer, also AFIT trainees.

Conferees hailed from 50 firms and included 111 AFIT officer students assigned to these firms for training. Pan American World Airways, Guided Missiles Range Division, was host company.

Keynote address was delivered by Maj. Gen. Ben I. Funk, commander of the Space Systems Division, AFSC.

S-C Will Take Part In Greek Project

Stromberg-Carlson has been awarded a U. S. Air Force contract, which under the U. S. Military Aid Program will involve supplying microwave and multiplex equipment for use in Greece as part of "Project Light Up."

Light Up comprises communication circuits which will interconnect various military operating bases with an existing long-line system.

Dynamics Studying Computer Center

A General Dynamics study group to analyze economic and operating factors involved in establishing a western regional computer center to serve West Coast divisions was organized recently.

Members of the group are R. E. Bennis and L. M. Smith of Corporate Office, Jack Mason of GD/Pomona, and GD/Convair's G. O. Withem. John H. Johnson, GD/Astro director of management systems, serves as chairman.

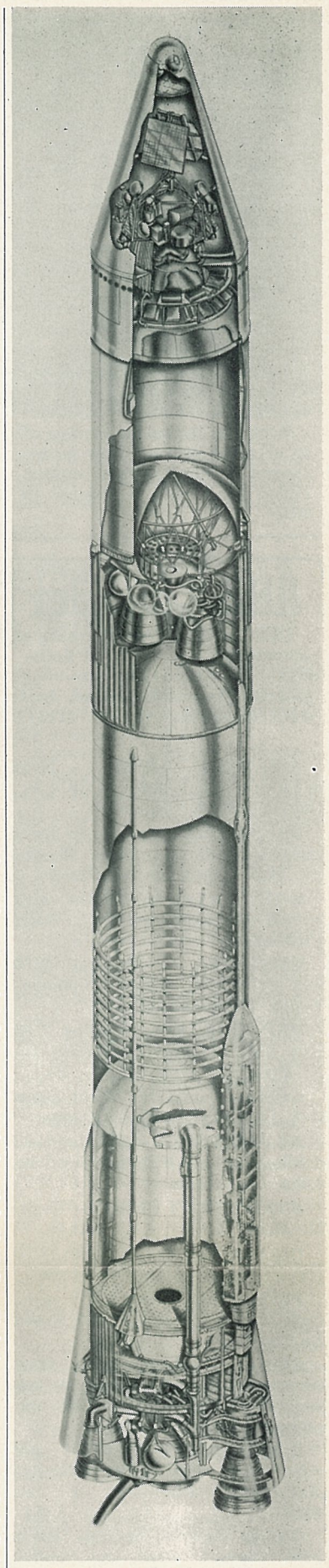
THIN FILM STUDY FUNDS AWARDED

Electronics division has received a $65,000 contract from the Division of the Air Force Avionics Laboratory, Air Force Systems Command, U.S.A.F., to continue work in thin film measurement techniques.

Studies began under company sponsorship in 1958.

ELECTRONICS WINS ARMY CONTRACT

The Fort Monmouth Procurement Division of the U. S. Army Electronics Command has awarded Electronics division a $75,000 contract for a study of electro-acoustic coincident pulse storage techniques.



ANATOMY—Rare view of Atlas-Centaur-Surveyor lunar-probing combination is provided in this cut-away drawing. Note how Centaur nestles snuggly on Atlas with Surveyor riding above, nestled within nose fairing that is jettisoned in flight. Insulation panels around Centaur are also jettisoned once they have served their protective role. This combination will be used to explore moon's surface during 1965 as prelude to manned lunar explorations later.

Quotes...

A good General not only sees the way to victory; he also knows when victory is impossible.

—Polybius

* * *

No amount of pay ever made a good soldier, a good teacher, a good artist, or a good workman.

—John Ruskin

* * *

Always dream and shoot higher than you know you can do. Don't bother just to be better than your contemporaries or predecessors. Try to be better than yourself.

—William Faulkner

* * *

If a man has talent and cannot use it, he has failed. If he has talent and uses only half of it, he has partly failed. If he has a talent and learns somehow to use the whole of it, he has succeeded, and won satisfaction and triumph few men ever know.

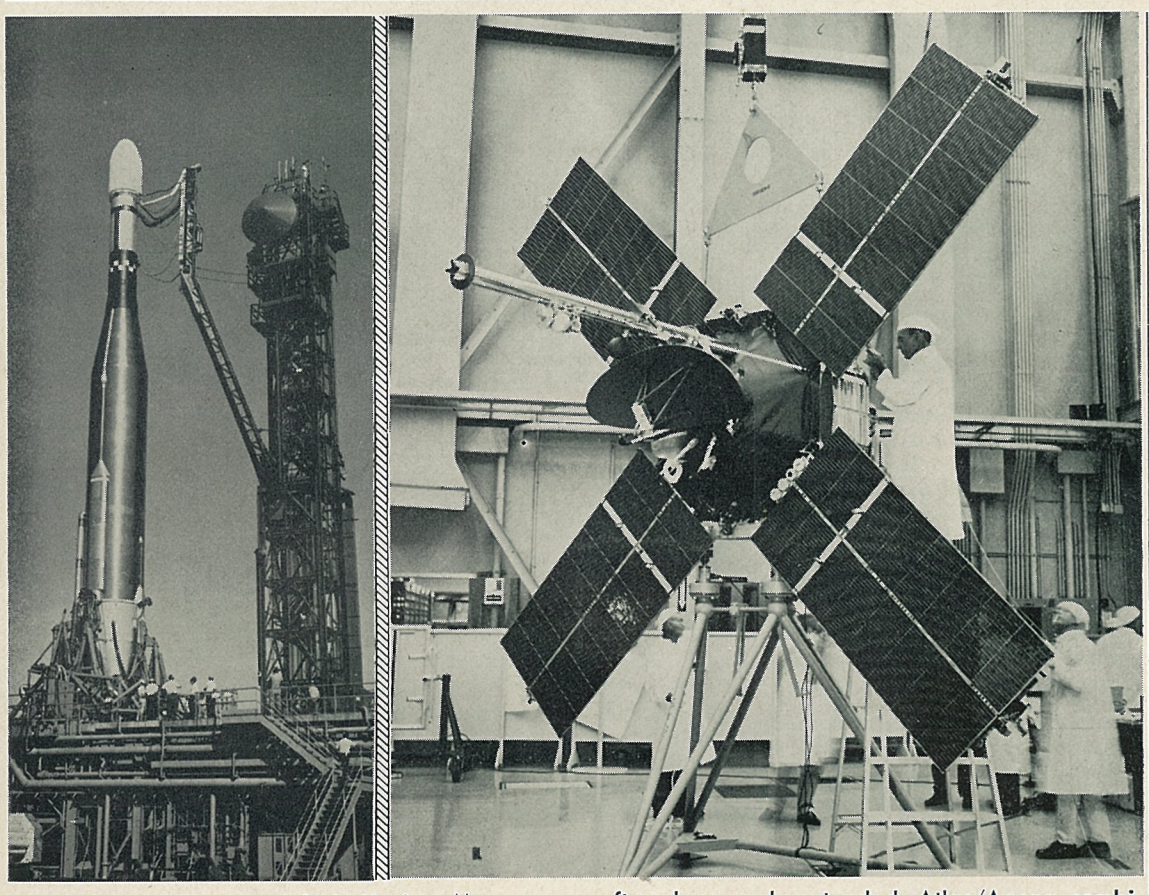
—Thomas Wolfe

GD

ASTRONAUTICS EDITION

GENERAL DYNAMICS NEWS

Vol. 17, No. 22 PUBLISHED BY GENERAL DYNAMICS CORPORATION Wednesday, October 21, 1964



MARS BOUND — At right is Mariner-Mars spacecraft, solar panels extended. Atlas/Agena combination will launch two of these on 350 million-mile journey to Mars for unmanned probe. At left is Atlas/Agena, with Mariner on top.

Two Atlases Prepared In Mariner-Mars Probe

CAPE KENNEDY—Two Atlas space launch vehicles are being prepared "in parallel" here for key roles in the most complex mission yet to be attempted in the nation's unmanned exploration of space.

This is the Mariner-Mars 64 program.

National Aeronautics and Space Administration (NASA) indicates the dual Mars probe will be carried out "during the fourth quarter of 1964."

Unique in many respects, the program calls for the exploration of interplanetary space between Earth and Mars (reporting on radiation, magnetic fields and micrometeorites); the validation of many new engineering techniques being tried for the first time; and planetary experiments to return television pictures and other measurements back to Earth.

The decision to launch two spacecraft on this mission was dictated, in part, by the difficult engineering task the Mars program represents.

Too, Earth and Mars are positioned for maximum results only during a brief period of days every 25 months. In 1964-65 this period also coincides with what is called the quiet Sun Period in which minimum interference from the Sun is encountered. Quiet Sun periods occur once each 11 years!

GD/Astronautics crews here are presently engaged in pre-launch conditioning of Atlas 288-D and 289-D (both are LV-3s) on Complexes 12 and 13 respectively. Orien Reed is Astro test conductor on 12, Cal Fowler on 13. Topping each Atlas is an Agena D stage and a Mariner spacecraft.

Prior to pre-launch operations, Astro crews here have modified each of the stands to accomplish the Mariner mission.

"In parallel" pre-launch operations will continue until launch time. The first spacecraft launched will be designated Mariner-C,

(Continued on Page 2)

Defense Executive Will Speak Tonight

F. A. Payne Jr., deputy director (strategic and defensive systems), Office of the Director of Defense—Research and Engineering, will address GD/Astro Management Club's meeting tonight (Oct. 21) in El Cortez Hotel.

Slated for the hotel's International Room, the program will be preceded by a social hour (5:30-6:30 p.m.) and dinner (6:30-7:30 p.m.).

The meeting is sponsored by reliability control department under Director P. I. Harr.

Flight Control At Pasadena

PASADENA — Monitoring and controlling upcoming Mariner-Mars 64 flights will be a unique, and relatively new, command center here known as the Space Flight Operations Facility (SFOF).

Jet Propulsion Laboratory of the California Institute of Technology operates the facility for NASA.

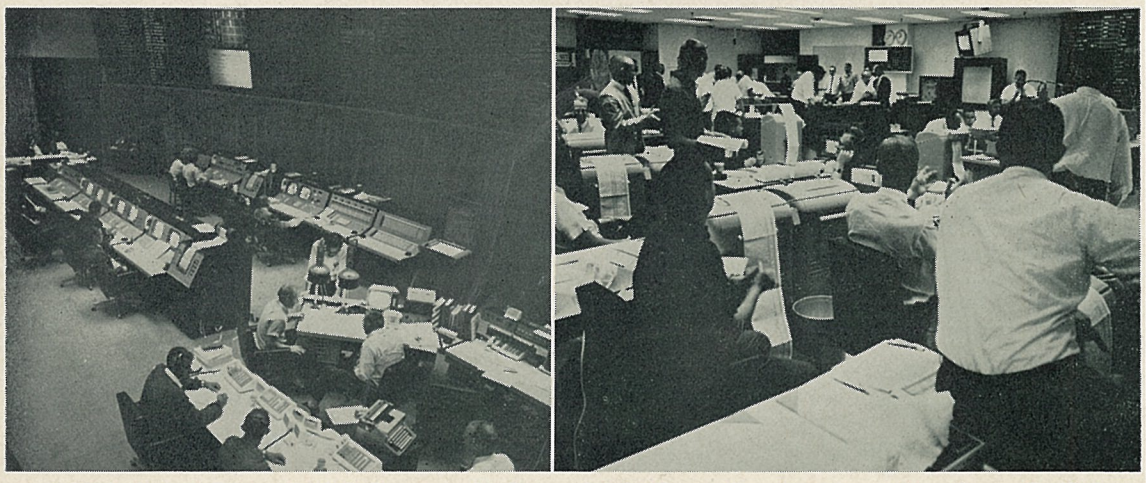
Dedicated in May, SFOF fills NASA's need for a centralized center to monitor and control all unmanned space flights to the Moon, the planets and into interplanetary space.

GD/Astronautics was a participant in one of SFOF's biggest triumphs to date—the Ranger 7 flight. Launched from Cape Kennedy July 27, Ranger 7 went on to send back the first close-up pictures ever taken of the Moon's surface. Ranger, Mariner and other space probes will continue the association. Too, beginning next year SFOF will support the Atlas/Centaur/Surveyor lunar exploration program for which Astro will build both launch vehicles.

At present SFOF can control two space flight missions and monitor a third. Expansion in progress will increase this capability to four missions under control simultaneously.

About 250 specialists support each mission, falling broadly into

(Continued on Page 2)



CONTROL CENTER — At left is scene in Space Flight Operations Facility at Pasadena, Calif. from which unmanned space flights are monitored and controlled. At right is performance analysis area photographed at moment that success of Ranger 7 shot was announced.

Con-Trib-Club Campaign in Stretch Drive

Only a few days remain in the all-out 1964 membership campaign conducted throughout October by GD/Astronautics Employees' Con-Trib-Club.

President J. R. Dempsey, acting as campaign chairman, declared Oct. 12-16 to be "Fair Share Week" and solicitors in all departments encouraged employees to consider "Fair Share" membership in Con-Trib during that period.

(Fair Share givers pledge four minutes' pay per day to the betterment of their community. This method allows each to contribute equitably according to earnings; permits automatic modification of the donation if earnings change; and eliminates the need for renewing Con-Trib membership annually.)

At press time, early returns indicated good response to the Fair Share appeal, and campaign solicitors had launched the second phase of the campaign—to seek a high percentage of Con-Trib-Club membership among Astro employees.

Campaigners are pointing to increased community needs in their effort to boost membership, explaining that Con-Trib is a "painless" means through which employees can fulfill their community obligations "once for all" without repeated solicitations from various agencies.

The broad spectrum of charitable and service organizations which depend on the "doing power" of these combined Astro gifts is illustrated in the accompanying list of disbursements for 1963.

Ten per cent of Con-Trib's total budget is earmarked for the Emergency Aid Fund, and channeled back to Astro employees who may be faced with financial emergencies which cannot be met by normal means.

Contract Let For Test Site For Redeye

GD/Pomona has taken initial steps toward building a Redeye missile final assembly and test facility on company-owned land adjacent to the government-owned Sycamore Canyon Test Site operated by Astronautics division north of San Diego.

A contract for grading of site and roads has been awarded to R. E. Hazard Construction Co. of San Diego, G. E. Sylvester, GD/Pomona vice president-operations, announced last week.

Bids are to be asked within the next few weeks for construction of a new building.

A maximum of 25 persons are expected to be employed in Redeye final assembly and test work at Sycamore facility by the end of 1965. Bulk of Redeye production will be accomplished at the Pomona plant.

Redeye, the shoulder-fired missile system, was developed for the Army and Marine Corps by General Dynamics/Pomona. A contract for initial production was awarded last April.

Report Shows Con-Trib in Action

SAN DIEGO DISBURSEMENTS — OCT. 1, 1963 - SEPT. 30, 1964

CHARITY FUND

United Community Services	$368,706.97
American Cancer Society — San Diego Chapter	7,500.00
American Field Service	350.00
Angels Unaware	500.00
Arthritis & Rheumatism Foundation	500.00
Bayside Social Center (Camperships)	600.00
Big Brothers of San Diego County	1,500.00
Braille Transcribers	300.00
Campfire Girls (Camperships)	200.00
Children's Dental Health Clinic	2,000,00
Children's Hospital	500.00
City Rescue Mission	1,500.00
Crippled Children's Society of San Diego County	2,500.00
Crossroads Foundation	837.50
Cystic Fibrosis Foundation	1,000.00
Door of Hope	4,000.00
Girl Scouts (Camperships)	550.00
Heart Association of San Diego County	7,500.00
International Guiding Eyes	1,000.00
Jewish Community Center (Camperships)	350.00
Jonas A. Salk Institute	2,500.00
Mental Health Association of San Diego	2,500.00
Mesa Vista Hospital	625.00
Muscular Dystrophy Association	1,500.00
National City Schools (Camperships)	50.00
Pastoral Counseling Service	1,000.00
Pathfinders Inc.	837.50
Poor Sisters of Nazareth	1,500.00
Poway Schools (Camperships)	50.00
Retarded Children's Association of San Diego	200.00
Salvation Army (Alaska/Crescent City Disaster Relief)	1,000.00
Salvation Army (Christmas Party)	3,000.00
Salvation Army (Camperships)	900.00
San Diego Children's Home Association	395.00
San Diego City/County Camp (Camperships)	1,000.00
San Diego Council on Alcoholism	837.50
San Dieguito Family Service Association	500.00
San Diego Eye Bank	500.00
Sheltered Workshops	2,200.00
Sixth Grade Camperships (Six Communities)	832.25
South Bay Pioneers	837.50
Sunnyside Guild	1,000.00
Synanon Foundation	1,500.00
Tuberculosis & Health Association of San Diego	775.00
United Jewish Federation	1,000.00
Volunteers of America	1,000.00
Y.M.C.A. (Camperships)	1,400.00
Youth for Christ	250.00
TOTAL	**$431,584.22**

EMERGENCY AID FUND

During the reporting period 370 cases were approved.
Disbursements:

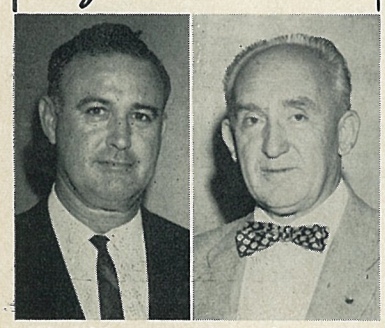
Food	18%
Rent or House Payments	28%
Hospital and Doctor Bills	44%
Miscellaneous (Utilities, Travel, Funeral, Clothing, Dependent Group Insurance Premiums)	10%
TOTAL	**$ 58,364.90**

GRAND TOTAL — CHARITY AND EMERGENCY AID FUND DISBURSEMENTS $489,949.12

RESEARCH ENGINEER GUEST SPEAKER

S. H. Logue, GD/Astro electronic research group engineer, was guest speaker at the October meeting of San Diego section, American Society for Quality Control (ASQC). He discussed Lasers in a talk, "The Light of Your Life." W. J. Martin, GD/Convair director of reliability was session moderator.

Log Book Entries



New 25-year men at GD/Astronautics are G. A. Grossaint, Dept. 400-0, left, and E. C. Generas, Dept. 410-0, both of whom received service emblems recently.

Norman W. Johnson, Dept. 832-3, is among new 25-year men at Astronautics.

Service Emblems

Service emblems due during the period Oct. 16 through Oct. 31.

Thirty-year: Dept. 380-1, P. A. Carlson.

Twenty-five-year: Dept. 780-3, C. R. Powell.

Twenty-year: Dept. 462-0, R. G. Newman.

Fifteen-year: Dept. 131-2, L. M. Failor; Dept. 143-1, Irene S. Hannibal; Dept. 170-2, R. A. Bonsignore; Dept. 780-3, Fannie L. Ridge; Dept. 832-1, M. J. Marks; Dept. 951-6, H. R. Bissell.

Ten-year: Dept. 101-2, Ray Hornibrook; Dept. 110-0, J. R. Bachman; Dept. 142-1, H. C. Keith; Dept. 170-1, Bonnie F. Vella; Dept. 195-0, R. L. Ricketts; Dept. 421-1, G. R. Selle; Dept. 425-3, Norma M. Morgan; Dept. 451-0, N. E. Rodgers; Dept. 452-0, C. R. Kibbee.

Dept. 504-2, V. L. Lintvedt; Dept. 523-1, C. A. Strackbine; Dept. 527-2, S. W. Scharf; Dept. 547-6, Joseph Haskins; Dept. 597-1, C. F. Borchert; Dept. 715-0, F. A. Lublow; Dept. 744-0, H. H. Moran; Dept. 833-3, W. K. Johnson; Dept. 952-1, D. L. Hodson; Dept. 979-7, Milton Chaitoff.

LINCOLN AFB

Ten-year: Dept. 389-6, D. M. Leonard.

Papers Presented

ASTRONAUTICS

CODY—J. L., Dept. 405-1. "Encapsulation of Welded Modules and Conformal Coating of Printed Circuit Boards," SAE/Aeronautics and Space Engineering Forum, Los Angeles, Oct. 6.

Personals

We gratefully acknowledge your kind expressions of sympathy during our bereavement.

The Dane Allard family.

* * *

We wish to express deep appreciation for the thoughtful kindness of our Astro friends during our sorrow at the loss of our wife and mother, Dorothy.

James Gabler (Dept. 374-0) and family.

* * *

We wish to express our sincere thanks to all our Astro friends for their thoughtfulness during our sorrow at the loss of our daughter, Janet Faye.

George Gillis, Dept. 250, and family.

Births

TRAXLER—Daughter, Serena Jo, 6 lbs., 10 oz., born Sept. 22 to Mr. and Mrs. R. N. Traxler, Dept. 142-3.

Deaths

GABLER—Dorothy, Dept. 663-0. Died Oct. 5. Survived by husband, James, Dept. 374-0; son and daughter.

YOCKEY—O. F., Dept. 143 (Ret.). Died Oct. 8. Survived by wife, Margaret.

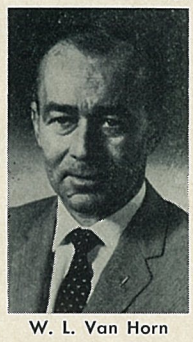
LINCOLN AFB

PAQUETTE—W. J., Dept. 389-2. Died Sept. 29. Survived by mother, Mrs. Mary Paquette of Minneapolis, Minn.

W. L. Van Horn Named to New Works Mgr. Post

The appointment of W. L. Van Horn to the post of works manager at GD/Astronautics has been announced by President J. R. Dempsey.

Van Horn will be responsible for electronic manufacturing, production engineering, assembly and fabrication, and material operations in his new assignment, reporting to E. D. Bryant, vice president — operations.



W. L. Van Horn

C. J. Dunn, previously assistant program director, AWS, was simultaneously named acting program director for the weapons system.

Van Horn, a native of Kansas, joined Convair in 1950 in master scheduling, served for a time at Fort Worth, and transferred to Model 7 (Atlas) in early 1956 as program control administrator. In 1958 he was named manager of long range planning.

He took charge of the Atlas program in 1961, and since January, 1962, has guided the Atlas weapons system project as vice president and program director.

Dunn joined Astro in 1957 as a staff specialist after earning a BS degree from Aeronautics University (Chicago) and working for major aircraft firms in engineering and sales. He was named chief project engineer, AWS project management, in 1962.

4,200 Receive Flu/Cold Shots

Forty-two hundred GD/Astronautics employees received injections of flu/cold vaccine administered by the medical department during the recent in-plant voluntary inoculation program.

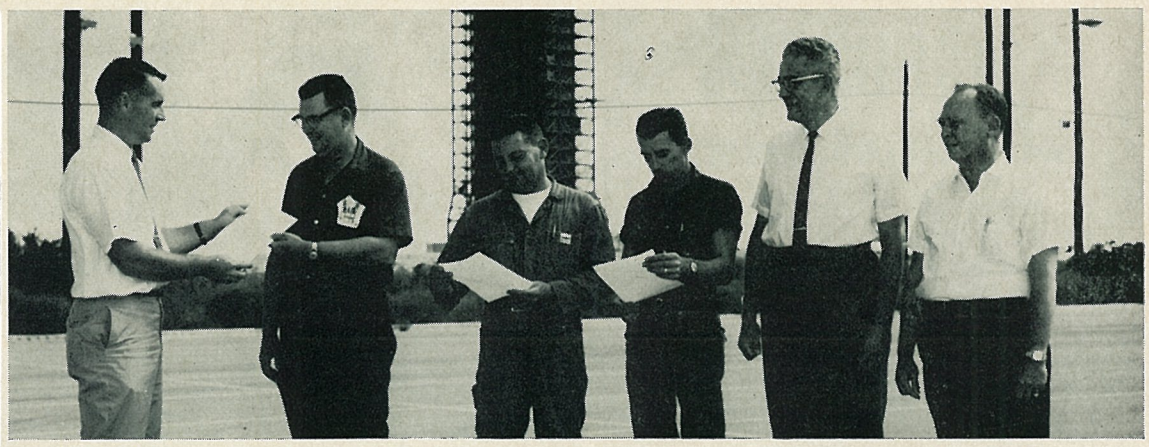
Dr. A. J. Bellanca, chief physician, said the second and final shot in the series will be available during December. Individuals will be notified as to the time and place.

For maximum effectiveness, flu/cold vaccine is administered in two injections spaced about two months apart. Thus, those employees who may have had previous inoculations need take only a single "booster" injection at this time. Those who did not sign up for the two in-plant injections but wish to take a "booster" shot only, may contact their immediate supervisor.

Earlier, Dr. Bellanca advised employees that mild reactions — sore arms, fever, muscular aches, etc. — might occur **(GD/NEWS,** Aug. 12).

"When such reactions occurred, it was a strong indication the individual needed the inoculation," he said. "In most cases the second inoculation should not cause discomfort. Therefore, all employees are urged to complete the series in order to receive **maximum** immunity."

Vaccine used contains both cold and flu virus, providing 50 to 90 per cent protection respectively.



BRAVE MEN — Roger Lynch, left, Centaur launch operations manager, presents letters of commendation to Tom Morgan, H. R. Dutcher and G. R. Morton at Cape Kennedy. Trio entered smoke filled manhole area to remove unconscious electrician recently (GD/NEWS, Sept. 23). Looking on at right are K. E. Newton, Eastern Test Range operations director, and K. W. Jeremiah, assistant program director—Centaur. Letters, from President J. R. Dempsey, lauded personal courage of men.

Two Atlases Prepared In Mariner-Mars Probe

(Continued from Page 1)

the second, Mariner-D. The second launch will follow the first as soon as practical, although no sooner than two days.

NASA has indicated maximum performance demands are being placed on the launch vehicles (Atlas and Agena).

This means that Atlas must propel Agena/Mariner into a precise trajectory through a minimum "space window" at exacting speeds.

Among other things, unprecedented distances are involved in the Mariner-Mars 64 program. At launch, Mariner will be aimed along a trajectory between the orbits of Earth and Mars which will be some 350 million miles long. At its destination Mariner will be 150 million miles from Earth.

In covering these remarkable distances, Mariner is expected to yield extremely important data on space navigation. And it will help prove the capability of powering a spacecraft by converting sunlight to electricity on a mission in which the Sun-spacecraft distance is steadily increasing. Mariner-Mars spacecraft will feature four solar panels for this purpose.

Each spacecraft will weigh about 570 pounds, will have a span of 22 feet with panels extended and a heighth of 9½ feet.

Flight time will vary, relative to the day of launch, from 7½ to 8½ months with an additional three weeks of flight beyond the planet needed to return data.

Previously, the longest distance traversed in unmanned probes came in 1962 in the Mariner-Venus flight (called Mariner II), which also utilized Atlas/Agena launch vehicles.

Comparison of that flight and the upcoming probes give some indication of the complexity involved.

Mariner II communicated successfully over 53.9 million miles; had a survival time of 3½ months; and contained 54,000 components. Mariner-Mars 64 spacecraft must communicate over 150 million miles; survive for a minimum of nine months; and have 138,000 components.

Mariner-Mars will have midcourse giudance rockets capable of firing twice, while earlier spacecraft had no restart capability. Agena D will be used for the first time in space probes and many new improvements on Atlas will be flying for the first time. And the star Canopus will be utilized for the first time as spacecraft attitude reference.

Management and technical direction of the Mariner-Mars 64 program is assigned by NASA to Jet Propulsion Laboratory. NASA's Lewis Research Center is responsible for Atlas/Agena vehicles, while the Goddard Space Flight Center's Launch Operations at Cape Kennedy will guide launch activities.

'Russ' Medlock, Archibald Get New Positions

New assignments for GD/Astronautics reliability and quality control veterans at the manager level were announced earlier this month by President J. R. Dempsey.

L. I. Medlock, formerly manager of quality control (Dept. 143-0) was named manager of Centaur reliability control (Dept. 956-0) replacing W. R. Jackson who has left the company.

D. R. Archibald, previously manager of AWS reliability control (Dept. 148-0) was named to Medlock's earlier post, with G. E. Briggs, chief of quality control final acceptance (AWS), named acting manager of the weapons system function.

Medlock has been with the company since 1941, joining Convair as a student inspector after study at Oklahoma A&M, trade and technical schools. His career includes Atlas base activation service as manager of Astro operations at both Warren AFB and Lincoln AFB.

Archibald also joined Convair in inspection in 1941, and subsequently held the position of chief of inspection. He shifted to Astro in 1956 as manager of quality control and has since served in several responsible quality control and reliability posts.

In their new assignments, Archibald and Briggs report to P. I. Harr, director of reliability control, while Medlock is responsible to Grant L. Hansen, vice president and program director—Centaur.

Astro Men Address Test Society Meet

San Diego Chapter, Society for Nondestructive Testing, held a special seasonal meeting recently at GD/Astronautics.

R. H. Gilliland, Astro manager of reliability control quality assurance, delivered the opening address. Other Astro men making presentations were J. A. Crush, D. C. Ryle and J. D. Scherkenback.

K. M. Boekamp, chapter chairman, conducted the meeting and discussed "Nondestructive Testing Process Control."

GLENNON ATTENDS COURSE IN EAST

Carl J. Glennon, GD/Astro standards engineer, recently completed a one-week course in industrial instrumentation held at the Leeds and Northrup Co. training center, Philadelphia.

Flight Control At Pasadena

(Continued from Page 1)

groups directly involved in the mission or others which support all missions.

Linked by an extensive communication network with NASA's Deep Space Net (tracking stations in Florida, South Africa, Spain, Australia and California), SFOF follows all unmanned space operations from pre-launch to orbit when it takes over direct control. Spacecraft radio scientific and engineering measurements, plus tracking data, is picked up by a Net station and relayed direct to SFOF, or stored for future transmission.

Incoming data goes into SFOF's highly automated computer system for instant processing. It is then distributed throughout the command center.

Push button controls make it possible for scientists and engineers to review the information in many forms—television screens or monitors, projection screens, automatic plotters or printers. Some information goes into storage for future applications.

GD/Electronics—San Diego aided in putting together this elaborate and rapid system by building eight high-speed electronic printers capable of transmitting coded information into electrostatically printed copy at a rate of 5,000 words per minute.

Information received enables scientists to objectively review all scientific and engineering data and to determine if signals are to be sent to the spacecraft to alter its flight path, etc.

The three-story SFOF can be operated around-the-clock with special quarters available for stand-by crews. There is even an auxiliary power system to keep the facility operating should normal power fail.

Fifty tons of wiring and cable are tied together in the computer and communication equipment. There are 31 consoles, 100 closed circuit television cameras and more than 200 television displays. A single console can provide its user with 150 contacts—via headset, telephone, inter-com or television. Digital displays have the capability of displaying 3,500 separate numbers.

The SFOF can accept, process and display 4,500 bits of data per second in real time. Additional information, up to 100,000 bits per second, can be recorded for later use.

BRAINSTORMERS—Recent session of cost target team working on GLOTRAC/Azusa transponder test set design at GD/Astro found J. R. Blackwood, left, George Eaton, E. J. Matson, Saul Lepen, Al Roth, Bob Weaver and Bruce Beach on hand. Expressions indicate they found "happy solution" to problems.

General Dynamics NEWS

Published by General Dynamics Corporation, One Rockefeller Plaza, New York, N. Y. 10020; with editorial headquarters at 3302 Pacific Highway, San Diego, Calif. 92112, P.O. Box 1950, telephone 296-6611, ext. 1071. Logan Jenkins, editor-in-chief.

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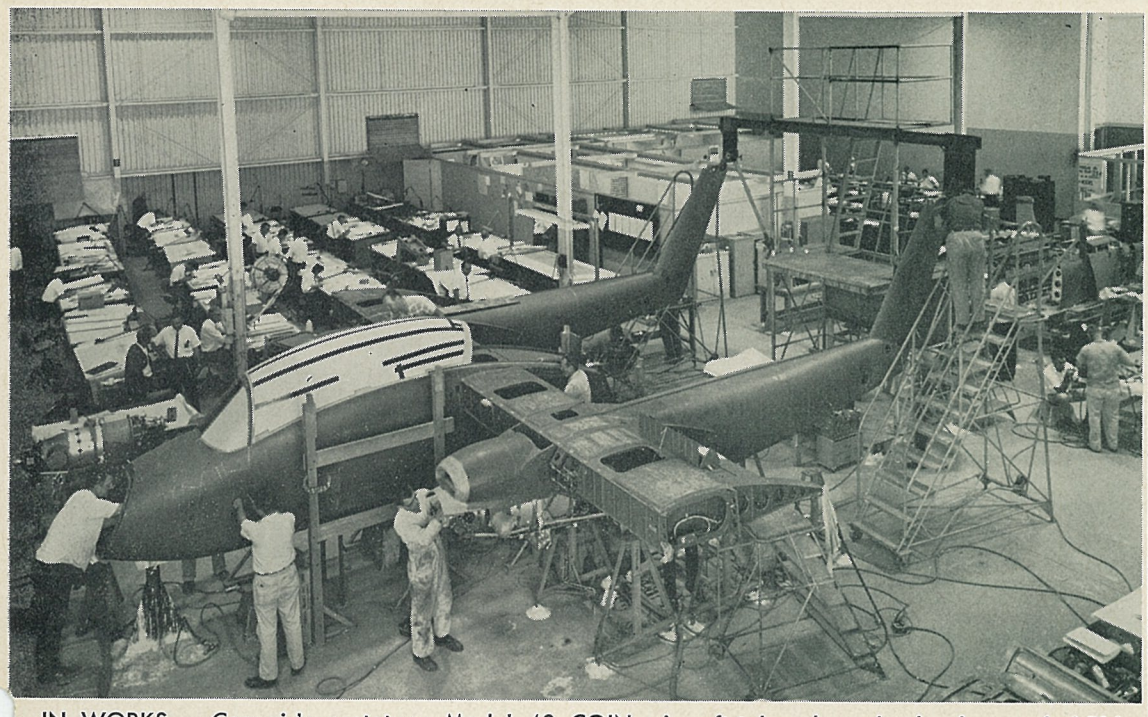
Affiliated editions of General Dynamics NEWS are published in Rochester, N. Y., covering GD/Electronics and Stromberg-Carlson, editorial offices, 100 Carlson Road, HUbbard 2-2200, ext. 2555. Fred E. Voss, editor; and at Groton, Conn., covering GD/Electric Boat, editorial offices at Groton, HIltop 5-4321, ext. 300 and 513, Joseph Tracey, editor.



IN WORKS — Convair's prototype Model 48 COIN aircraft takes shape in closely-guarded Bldg. 69, division's first engineering prototype facility where all engineering (in background), fabrication, assembly functions were based from start of project last March to plane's completion last month.

Production of Model 48 Prototype Closely Guarded Secret—No Leak

When GD/Convair's Model 48 COIN plane was revealed Sept. 29, doors of the division's engineering prototype facility were thrown open for the first time in six months to disclose the operation that made the high-geared production possible.

And, some 200 Convair people saw "daylight" once more after their "disappearance" six months before.

Convair's first closed-door operation — or "Skunk Works" — turned out a fully-completed, ready-for-production plane in that six months.

Normal production time for such a craft is 13 months!

"We had one purpose," said Convair President J. H. Famme, "and that was to build an airplane quickly and inexpensively."

All operations necessary for the task—engineering, tooling, manufacturing, material — were located in one isolated building, Bldg. 69, for expediency and security to keep the competition in the dark.

"A simple organization and the closest coordination between all functions involved is paramount in a prototype production of this kind," said J. M. Adamson, director of design development, who was elected by Famme to coordinate the Model 48 organization.

"However, success of the 'project-type' operation depends primarily upon the key people chosen to implement the program," Adamson continued. "Each must be aggressive, imaginative, and unrestrained by 'time-honored' methods, systems and procedures, and policies. Each must be a free thinker, willing to subjugate the sanctity of his home department's operation to the good of the end product."

N. R. Keough was named manager of the engineering prototype facility to oversee all operations and to choose his trusted and experienced production team.

James Wainwright was given responsibility for all engineering.

Thirty design engineers, familiar with the COIN proposal, were called together by Adamson on March 19 and informed of their new assignment. They dropped from sight at that minute and were never seen on the job by their former supervisors until after their task was completed.

The proposal for a Convair Light Armed Reconnaissance Airplane, delivered to the Bureau of Naval Weapons, was the "bible" of design engineers. Specifications were followed exactly, and, at conclusion of the task, a complete set of drawings for production had been compiled.

Within three weeks from start date, the first pre-release drawing was ready and Keough began pulling in his key people as necessary to convert drawings into hardware.

Willard Martin was made shop supervisor; Al Oberg was tapped to direct tooling and fabrication. John Wasem, manufacturing specialist, coordinated release of engineering drawings in desired manufacturing sequence.

The sequence was established on the basis of lead times necessary for each assembly, and engineering drawings released as needed to support the sequence.

Since the cockpit—heart and brain of the craft, containing all the complex instrumentation—required the longest lead time, all schedules were geared to its requirements. First assembly on the drawing board and into the manufacturing process was the pilot's floor torque box, initial component in the build-up of the cockpit area.

Engineers and production men worked hand in hand to coordinate every process, consulting over each other's shoulders at desks and machines for exact requirements. Detailed parts were made from one assembly drawing to expedite fabrication and save all-precious minutes.

Each major component and system was assigned to a lead engineer who was responsible for design and release of drawings on schedule and within all specifications. A factory leadman worked with his engineering counterpart to keep abreast of the design picture at all times. Leadmen had complete responsibility for monitoring their parts, procurement, and assembly—on schedule.

Engineering drawing release priority was drawn up and a target release schedule established for each engineering group for all drawings due for release every Monday morning at 8 o'clock sharp. Each morning began with a quickie meeting to iron out problems, conflicts, or lack of information.

THEY KEPT SECRET — Three close-mouthed Convair women (from left), Fern Barton, Deloris Meredith, and Evelyn Gilger, did their part in guarding secret of Model 48 as only women assigned to project.

CONVAIR GIRLS 'IN THE KNOW'

Three Convair women didn't tell all they knew—to disprove the old saw—during the six months they were "entombed" in the off-bounds prototype facility during production of the first Model 48.

Evelyn Gilger, secretary to N. R. Keough; Deloris Meredith, who handled all stenographic and clerical work for the engineers; and Fern Barton, the one-gal blueprint reproduction department, kept sealed lips about their work throughout the "secret" project.

The three, only women assigned to Bldg. 69, were hand-picked for their assignments. Each was chosen for her high capability on her job, and for her trustworthiness off.

Four Divisions Are Represented At NMA Meet

Officers from at least four General Dynamics Management Clubs are attending the National Management Association's "Progress with Purpose" convention in St. Louis, Mo., this week, Oct. 21-23.

Fort Worth Management Club is represented by F. B. Thompson, president; R. L. Sullivan, board chairman; John Payne, NMA national director; R. M. Geisler, recording secretary; and L. E. Maxwell, H. R. Bean, and Horace Booth, directors.

Payne attended an NMA board of directors meeting preceding the convention and Maxwell is in charge of the FW club's audio-visual display at the Idea Fair exhibit.

Delegates from the GD/Astronautics club are: D. K. Slingsby, president; R. T. Bauman, past president and NMA director; J. R. King, first vice president; J. C. Duffy, second vice president; G. J. Gonlag, treasurer; J. F. Baebler, financial secretary; J. L. Mumford, recording secretary.

Convair Management Club officers in attendance are: W. J. Wood, president; M. L. Sweeney, first vice president; Harold Hahn, recording secretary; Robert Macomber, financial secretary; and K. K. Verseckes, treasurer.

From Pomona Management Club are: R. A. Dutton, president, and W. F. Nye, vice president.

People Mobility

Interdivisional Transfers

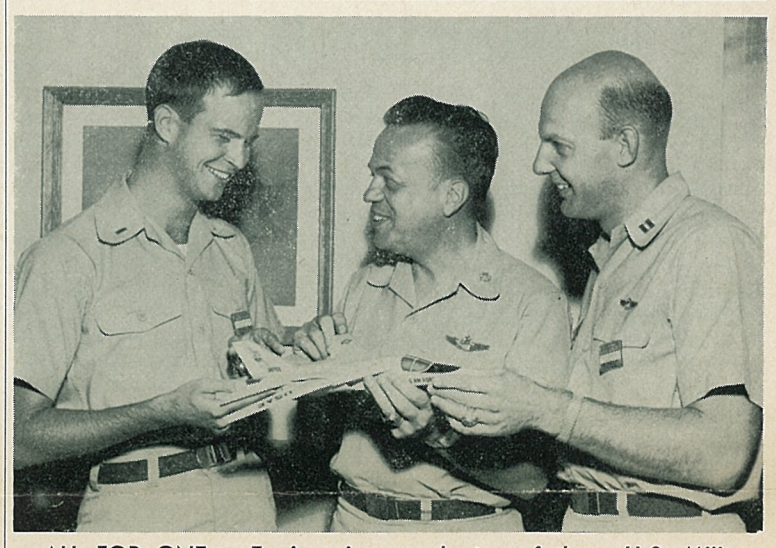
(Following are recent personnel transfers among General Dynamics divisions. In parentheses are dates when individuals joined the company.)

RICHARD C. O'SULLIVAN (1962) from Corporate headquarters to Electric Boat as comptroller; **BURT A. REES** (1956) from Astro to electronics engineer, Convair; **GUS PAPPAS** (1959) from Canadair to airframe design, Fort Worth; **LELAND DRESSER** (1950) from Astro to Electronics-Rochester production engineering; **CHARLES M. BOX** (1948) from Astro to Fort Worth manufacturing control.

BENOIT LA CHANCE (1957) from Astro to Electronics-Rochester mechanical engineering; **DANIEL J. CHIARAPPA** (1960) from Astro to design specialist, Convair; **NORMAN B. LEE** (1947) from Astro (Abilene, Texas) to Fort Worth tool and operations planning; **ERICH W. WOLF** (1963) from Astro to structures engineer, Convair; **NORMAN C. JOHNSON** (1959) from Astro (Plattsburgh, N. Y.) to production engineering, Electronics-Rochester.

JEAN L. K. INGLEHEARN (1958) from Astro to General Atomic; **JOEL G. LINEBARGER** (1951) from Astro (Salina, Kan.), to production control, Electronics-Rochester; **JOHN W. WOHLWEND** (1964) from Astro to Convair engineering; **JIMMIE D. EVANS** (1960) from Astro (Abilene) to Fort Worth manufacturing control; **RALPH E. BANACH** (1955) from Astro to planning and controls, Fort Worth; **EDWARD A. IPSER** (1961) from Astro to support equipment design, Fort Worth.

JOHN E. WILBAND (1958) from Astro (Abilene) to Fort Worth support requirements; **ROBERT W. HOTCHKISS** (1963) from Astro (Salina) to production control, Electronics-Rochester; **ERNEST A. THOMPSON** (1960) from Astro to Fort Worth support requirements; **HOWARD GAINES** (1956) from Astro to Electronics-Rochester; **JOHN T. RODGERS** (1950) from Astro (Abilene) to project coordination, Fort Worth.



ALL FOR ONE — Engineering graduates of three U.S. Military Academies help monitor F-111 development in AFPR's development engineering section. From left: Lt. Richard H. Ellis (Air Force Academy); Maj. Edward A. Kostyniak (West Point); and Capt. Robert R. Manuel (Annapolis).

Can You Top It?

F-111 Team Includes Grads Of Three Military Academies

The bi-service F-111 is getting "tri-service" attention.

Graduates of three United States military academies are represented in AFPR's five-man development engineering section, which monitors engineering on the F-111 and other GD/FW projects.

The men and their areas of responsibility are: Lt. Richard H. Ellis, F-111 fuel system; Maj. Edward A. Kostyniak, electronics group; and Capt. Robert R. Manuel, crew module.

Lieutenant Ellis is a 1964 graduate of the Air Force Academy. Major Kostyniak graduated from the U. S. Military Academy in 1949. And Captain Manuel earned his degree from U. S. Naval Academy in 1953.

All three engineers now wear Air Force blue. And all three serve under Lt. Col. G. W. Norris, chief of development engineering in AFPR.

Colonel Norris admits the chances of such a trio winding up in the same outfit—in the same section—are small.

But the coincidence can probably be attributed in part to a former government policy. Before the Air Force Academy started turning out officers in 1959, about 25 per cent of the graduates of Annapolis and West Point were assigned to Air Force.

Now, of course, a majority of graduates enter the service for which they were specifically trained.

Which makes the odds of getting "tri-service" attention on a bi-service airplane pretty high.

Astro Plays Host To Quality Parley

GD/Astronautics was host for the October meeting of the General Dynamics Supplier Quality Control Working Committee.

Charles Wallman (GD/Convair), committee chairman, and L. I. Medlock (GD/Astro) handled opening statements and discussions of highlights of the Corporate Quality Control Panel Meeting (in Washington, D. C.), respectively.

Also appearing on the two-day program were Sam Braun and T. J. Marcella of Astro; C. W. Schacht, S. K. Chambers and C. L. Penland of GD/Pomona; S. L. Taylor of GD/Fort Worth; and M. E. Walker of GD/Convair.

ON TOUR — Dr. Homer E. Newell, center, NASA associate administrator for Office of Space Science and Applications, was recent visitor to GD/Astronautics. Following tour with President J. R. Dempsey, left, and Ronald Rovenger, NASA resident manager at Astro, Dr. Newell attended briefings, later addressed Astro Management Club.

Prophet Celebrates With Bargain Meal

General Dynamics diners will have a chance to eat a roast turkey dinner at prices of 45 years ago tomorrow (Oct. 22) when the Prophet Co., operator of GD cafeterias, observes its 45th anniversary.

Astro and Convair cafeterias will serve a complete celebration meal for 45 cents, plus tax.

Menu will include turkey, dressing, potatoes, peas, giblet gravy, cranberry sauce, green salad, roll and butter, drink, and anniversary cake.

Skate Club to Hold Halloween Party

General Dynamics Ice Skating Club will hold its annual Halloween Costume Party at Mission Valley Ice Plaza, 6:30 p.m., Oct. 29.

The event will feature games and free refreshments, with awards for game winners and best costumes. Those in costume will also be eligible for a special door prize.

A special admission price of 50 cents per skater, including rental skates if required, will apply on the party night only. No skating instruction will be given.

The following Thursday, the club will resume regular weekly sessions, with free instructions for both beginners and advanced skaters, and half-price admission during a 6:30 to 8 p.m. private session.

The group is open to all San Diego area General Dynamics employees and their families.

SECOND TIME AROUND — Astro's Maynard Bjorstrom, left, and Jim Good, aid Steve Barinka, chief of Centaur final assembly and check-out (Dept. 972), in adding seal for September award to Craftsmanship plaque. Department won division-wide Do Good Work program in June; last month repeated with 109.1 Quality Index. Runner-up was Dept. 759 with 107.7 score, while Dept. 382 and Dept. 732 tied for third with Quality Indices of 107.0.

Quarter Savings Top Million; Best Submitters Earn Honors

Third quarter savings of over $1 million were recognized recently when P. I. Harr, GD/Astronautics director of reliability control, presented certificates to Cost Reduction Project submitters within his departments.

The certificates are issued by President J. R. Dempsey to honor individual achievements in the division's cost reduction and value control programs.

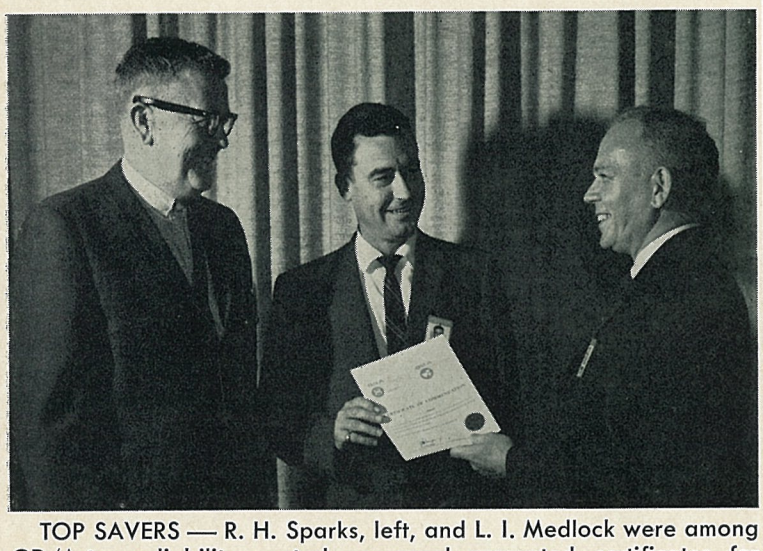
In line for special congratulations was R. H. Sparks, chief of reliability control electronic manufacturing inspection (Dept. 143-3), initiator of a project with $264,222 savings.

Sparks recommended rescheduling certain inspection operations, and the use of surveillance sampling in lieu of 100 per cent inspection in other areas. Implementation of his project resulted in improved personnel utilization without adversely affecting quality, performance or schedule.

The department's runner-up in terms of dollar savings during the reporting period was L. I. Medlock, formerly quality control manager (Dept. 143-0) and now manager of Centaur reliability control. Medlock implemented a project with savings of $246,138.

Other third quarter CRPs initiated within the department came from:

Dept. 140: P. M. Benner, S. Engelman, W. E. Magnuson.
Dept. 141: H. H. Mishler, E. M. Duke, R. E. Dubel, D. R. Miller, W. W. Wilimek.
Dept. 142: R. C. Delicath, G. A. Senn, R. E. Kemp.
Dept. 143: T. A. Bessey, T. J. Marcella, F. S. Graham, R. B. Kalanquin, W. Olson, R. L. Stanberry, E. E. Durbin.
Dept. 145: C. S. Thomas.
Dept. 146: N. B. Carlton, J. A. Long, G. C. Eggen, H. F. Stout, L. Dassoff.
Dept. 147: W. J. Maloney.
Dept. 148: J. M. Leech.



TOP SAVERS — R. H. Sparks, left, and L. I. Medlock were among GD/Astro reliability control personnel presented certificates for Cost Reduction achievements recently by Director P. I. Harr, right. Sparks and Medlock led department's third-quarter savings with projects saving $264,222 and $246,138 respectively.

Nov. 6 Is Deadline For Mgt. Club Golf

Management Club golfers must sign by Nov. 6 if they plan to compete in the first annual tourney sponsored by the San Diego Area Council, NMA.

All present and past members of Astronautics, Convair, and GD/Electronics Management Clubs are eligible to enter the Nov. 21-22 links medal tournament. It will be played over Cottonwood Country Club course.

Entries may be made through division representatives: Convair —Terry Kell, Plant 1, ext. 605, zone 423-00; GD/E and S-C,— Ernie Paul, Stromberg-Carlson, Hancock St., ext. 2193.

Astro Management Club members will receive entry forms via mail.

First Flight Covers Planned For Charger

Covers commemorating first flight of Convair's Model 48 Charger will go on sale at Convair employee services immediately following the new plane's maiden flight, set for this week.

Jack Benedict, CRA Stamp Club commissioner, has arranged for 500 covers to be postmarked with time and date of first flight. They will sell for 25 cents each, as long as the supply lasts.

GD Gardeners Enter Show

The best of late-summer blooms —chrysanthemums and roses— will be displayed by General Dynamics gardeners during the ARA-CRA Fall Show, Nov. 1 in Balboa Park's Floral Association Building.

Entries will be accepted between 7 and 11 a.m. the day of the show. No pre-registration is required, no entry fee is charged, and any General Dynamics employee or dependent is eligible to enter.

Everett Henderson, ARA commissioner, and Henry Boyd, acting CRA commissioner, have announced judging in eight divisions.

Divisions 1 through 4 will be for chrysanthemums in 25 classes; Division 5 is for arrangements in six classes; Division 6 is for children, divided by age into 5 to 11 years, and 12-16 year classes; Division 7 covers three classes of roses; Division 8 is for corsage entries in three categories.

Best of show winners in Divisions 1 through 7 will receive turkeys, except that winner of the children's group will receive an alternate prize. Class winners will be given merchandise awards.

The show will be open to the public without charge from 1 to 6 p.m.

IRC Bowling Meet Deadline Approaches

GD bowlers must sign by next Friday (Oct. 30) to be eligible to take part in the annual Industrial Recreation Council bowling tournament, reminds Mike Brooks, IRC tourney chairman.

The keg battle will be held at Pacific Recreation the weekend of Nov. 7-8.

Entry forms still are available at Astro, Convair, GD/E, and Stromberg-Carlson employee services centers or from Brooks.

Year-End Holidays Set For GD Plants

Up-coming holidays in store for General Dynamics people employed at plants and off-site facilities in California are Thanksgiving Day, Nov. 26, and two extra days over the Christmas and New Year's legal holidays.

Astronautics, Pomona, Convair, Stromberg-Carlson, GD/Electronics facilities in San Diego will get the Thursdays before Christmas and New Year's off, making two long four-day weekends. Except for necessary maintenance and security, plants will be closed Dec. 24 and 25, Dec. 31 and Jan. 1.

GD/Astro Engineer Authors Two Books

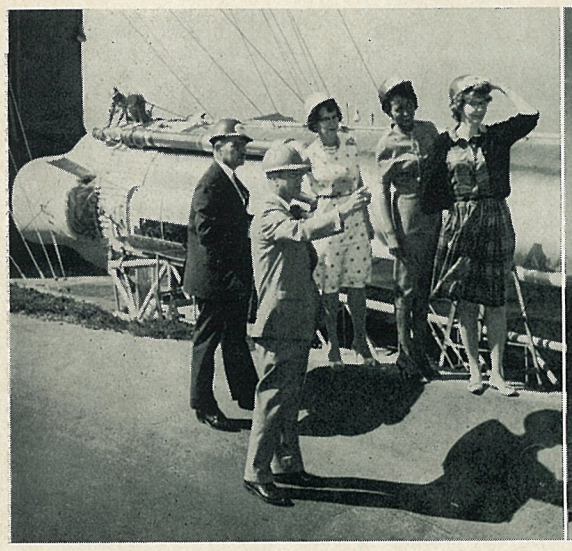
McGraw-Hill Publishing Co. has just released two "self-teaching" books by GD/Astro's P. H. Selby, a Dept. 262-3 senior research engineer. They are available at San Diego book stores.

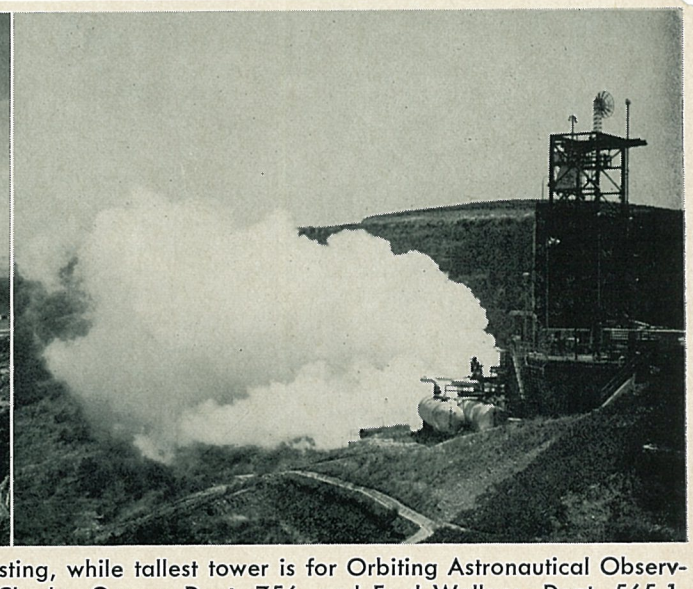
The programmed instruction books, one on trignometry, another on logarithms, are forerunners of what will ultimately be a series of six to eight books leading students from basic arithmetic through integral calculus (GD/NEWS, Nov. 27, 1963).

Selby pointed out that each volume is entirely self-contained and is for general instruction or review use by industry, military agencies, technical and trade schools, and individuals with a desire to learn mathematics.

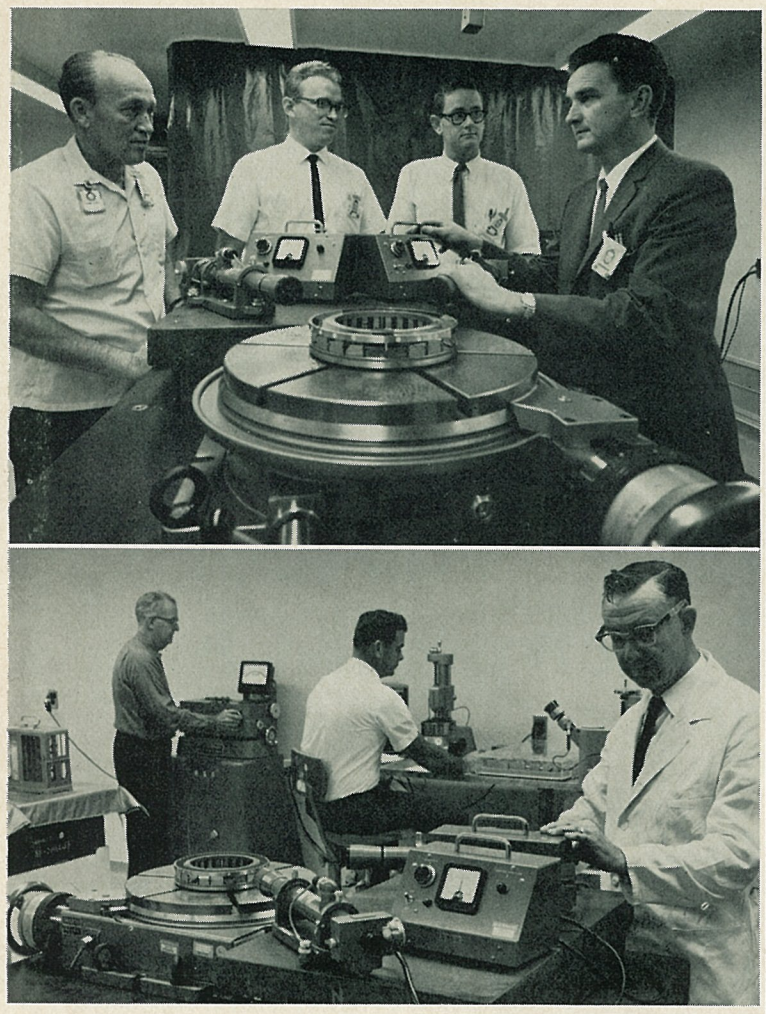
Salvage Hours Set At Convair, Astro

Both Convair and Astro salvage yards will be open for employee sales this month. Convair's yard will hold sales hours this coming Saturday (Oct. 24) and the Astro yard at Plant 71, Kearny Mesa, will be open from 8 a.m. until noon the following Saturday (Oct. 31).





TEST SITES—Astronautics' Point Loma and Sycamore Canyon test sites now are responsibility of Centaur project organization. At right is scene at Sycamore during "steam blow down" to provide vacuum for Centaur engine tests. In center is Point Loma, looking north. Two towers in left front are for Centaur nose fairing separation and cryogenic testing, while tallest tower is for Orbiting Astronautical Observatory setup. At left, Charles Graser, Dept. 756, and Fred Wallace, Dept. 565-1, conduct orientation tour at Point Loma for Alma Dickens, Dorathea Lang and Lee Anderson, first of sex ever assigned to site.



HIGH STANDARDS — Precision equipment, much of it new, installed in recently completed Dimensional and Optical Calibration Laboratory at Astronautics is displayed by employees who man facility. In top photo, R. J. Spanley, left, R. E. Jobe, C. E. Beal and M. A. Wolfe, asst. test lab group engineer, gather around autocollimator. In lower picture, C. W. Blake, foreground, checks out same device, while O. W. Williams, left rear, mans internal comparator, and H. E. Bieser, gage block comparator.

New Dimensional, Optical Lab To Upgrade Calibration Work

A new "Dimensional and Optical Calibration Laboratory" was occupied last month by the standards lab section of GD/Astronautics reliability control (Dept. 142-1) as one of a current series of steps in up-grading division calibration operations.

The new facility is an enclosed, 20 by 36-foot area in Bldg. 5, Plant 71.

Calibration equipment now installed here (much of it new), is capable of precise optical and angular measurements plus measurements of roundness, flatness and surface finish.

Controlled environment, essential to optimum use of standards equipment, is provided within the new facility, with temperature constantly maintained within one degree of 68° F.; relative humidity controlled between 30 and 50 per cent; and 90 per cent of 10-micronor larger particles removed by an air filtration system from incoming air.

Under Standards and Calibration Labs Manager A. J. Woodington, H. C. Keith, senior standards lab group engineer; assistant test lab group engineer; and Standards Lab Engineer C. E. Beal, a team of six technicians processes some 2,500 pieces of equipment each month.

The facility supports inspection, manufacturing and engineering departments by servicing such instruments and precision tools as jig transits, theodolites, collimators, sight levels, gauge blocks, threaded plug and ring gauges, micrometers, dial indicators and surface roughness gauges.

The new lab was constructed by General Acoustics Corp. of Los Angeles, to specifications prepared by the standards laboratory. Construction coordination was provided by GD/Astro plant engineering (Dept. 250), with S. E. Chavez, supervisor, and George Norton, project engineer, handling the task.

Many other improvements which will further improve standards labs' calibration capabilities in all areas of measurements are now being instituted or are planned for the near future.

IRC Charm Series Open to Astro Folk

The Edith Antelline charm course for women is open to Astro employees and dependents through ARA participation in San Diego Industrial Recreation Council.

An advanced class, meeting two hours weekly in Balboa Park's House of Hospitality, begins Nov. 4 offering six sessions for $19.50. Interested persons may contact Edith Antelline Russell, 336 Eighth St., Del Mar, for information.

ARA Calendar

(GD/Astronautics Recreation Association has some 40 activities in operation for employees. For information, call ARA Headquarters, ext. 1111).

★ ★ ★

AMATEUR RADIO — Mystery transmitter hunt, 7:30 p.m., Nov. 4, starting ARA Clubhouse. Check in with W6UUS, 3925 kcs.

ASTROLENS — Meets 7:30 p.m., Nov. 1, Photo Arts Bldg., Balboa Park. Program on photo greeting cards.

ASTRO PLAYERS — Presenting "Solid Gold Cadillac," opening Nov. 18. Set construction nightly, 7:30 p.m., ARA Clubhouse. Also, Saturday, Sunday mornings.

COINEERS—Meeting 7:30 p.m. today (Oct. 21), ARA Clubhouse. Topic: Commemoratives.

EXPLORERS — In-Ko-Pah Gorge field trip, Oct. 24, 25.

GARDEN CLUB — Fall Show, Nov. 1, Floral Assn. Bldg., Balboa Park. Entries accepted at show, 7 to 11 a.m.; open to public free, 1 to 6 p.m.

GUNS — Open Troy trapshoot Oct. 25, Gillespie Field Range.

JUNIOR RIFLEERS — Meeting tonight (Oct. 21), 7 p.m., ARA Clubhouse. Semi-annual trophy shoot, CRA Range, Oct. 31.

ORGAN CLUB — Meets 7:30 p.m., Nov. 3, ARA Clubhouse.

SNOW SKI — Meeting 7:30 p.m., Nov. 4, ARA Clubhouse.

ZORRILLA, NICHOLAS SCORE IN FISH DERBY

Winners in the combined lobster-spearfishing dive held by the Astro Divers Oct. 11 were Jorge Zorrilla (8 lobsters), Bob Nicholas (6½-pound lobster and 11-pound sheephead) and Howard Gutzmer (4 lobsters).

Scheduling Helps 'Beat the Rush' At Health Club

Here's a tip for present or would-be members of the popular ARA Health Club — there are many hours each week when facilities are available without the congestion sometimes encountered.

Actually, the Health Club is large enough and features enough equipment to handle groups at any time. And there is always room for new members.

However, since opening in April the club has found many employees prefer to carry out their personal physical fitness program immediately after completing their work shifts. Thus, from 4 to 6 p.m. larger crowds are on hand.

On the other hand, evening periods (from 6:30 to closing) are normally wide open. And those hours reserved for women are always ideal.

Hours have been set to best accommodate various groups. For instance "men only" periods are from 11:30 a.m. to 10 p.m., Monday, Wednesday and Friday; "ladies only" from 9:30 a.m. to 11:30 a.m. Monday, Tuesday, Wednesday and Thursday, and from 2 to 7 p.m. Tuesday and Thursday. "Family hours" for mixed groups are from 7 to 10 p.m. Tuesday and Thursday and from 10 a.m. to 5 p.m. Saturday.

Membership fees are $12 per year for individuals and $18 per year for families. Recently added is provision for paying fees via payroll deduction with information available at the Health Club, ext. 1111.

Fees entitle members to full use of all facilities, including a sauna-steam room, locker room, etc., plus the services of instructors (both male and female). Instructors help the individual work out a program to best fit his or her need.

Prospective members are invited to drop by the Health Club in ARA Clubhouse or to call ext. 1111 for details.

Free Instruction Offered Dancers

An unusual opportunity for potential beginning square dancers among Astro employees is being offered by the ARA Astro Nauts.

At 7 p.m. on Oct. 27, Nov. 3 and 10 at ARA Clubhouse all would-be dancers will be treated to free instructions. That is, the normal small charge is being waived for this introductory period only.

No previous experience is needed and singles as well as couples are welcome, according to Commissioner Marty Stutz. After the free period, regular weekly (Tuesday) sessions will continue through the winter months.

Junior Science Club Sets Nov. Schedule

A unique educational activity conducted under ARA sponsorship is the Junior Science Club which convenes at 7:30 p.m., first and third Friday of each month in ARA Clubhouse.

During November, guest experts will be Donald H. Robey, Astro staff scientist in the advanced studies group of research, development and engineering, Nov. 6; and William C. Smith, Mission Bay high school instructor, Nov. 20. The latter session will be held at the school on the topic, "Graphic Arts in Motion."

The club is designed to interest students from age 10 through high school level. Irving C. Litchfield, former Astro technical writer and now a junior college instructor, attends each meeting to assist youngsters in report writing and recording observations.

More information on the group is available from Keith Sears, Plant 71, ext. 2328.

Sports & Recreation

Astro Players Schedule Nov. 18 Opening of 'Solid Gold Cadillac'

Rehearsals are now under way for the ninth production to be presented by Astro Players, ARA drama club.

The show, "Solid Gold Cadillac," is scheduled to open Wednesday, Nov. 18, to run over a four-week period. Dates are Nov. 18, 19, 20, 25, 26, 27, 28; Dec. 2, 4, 5, 9, 11, 12.

Astro Players has selected a proven success in "Cadillac," since the show enjoyed a long-term run on Broadway and was subsequently released as a motion picture. Its comedy themes remain timely and deal with politics, corporation manager and stockholders.

Lily Mae Barr, Prophet Co. employee known for her hilarious performances in earlier Astro Players shows and with little theater groups throughout the San Diego area, will take the leading role.

Cast in supporting parts are Arne V. Hokans, Al Varon, Kay O'Brien, Jim Williams, D. D. Sleinger, Nancy Crawford, Victoria Wilson, Kenneth Harmon and Mark Jenkins. Broadcasters will be portrayed by Charlene Smith, James Jones and Anne Marie Ender.

Reserved seat tickets are available now at $1.50 through employee services outlets. General admission tickets ($1) will be offered through the same source, and at the ARA Clubhouse box office immediately preceding each performance.

ARA Radio Club Slates 'Mystery' Search Nov. 4

A radio-controlled version of a "treasure hunt" will be conducted Nov. 4 by ARA Amateur Radio Club, as members seek to track down a small "mystery transmitter" using mobile equipment.

Participants will meet at ARA Clubhouse at 7:30 p.m., with check-in coordination managed by the club station (W6UUS) on a frequency of 3925 kcs.

Mobile teams will consist of a driver and an assistant, to orient the directional loop antenna in an effort to pin-point the mystery transmitter through triangulation.

Winning team will receive a turkey as first prize, with domestic and foreign call books going to second and third arrivals at the transmitter site.

Amateur Radio Club also operates a check-in net for members using mobile equipment while going to and from work. The net operates on 3922 kcs, with crystals available from Bill Roden, station engineer.

Gorge Excursion Set by Explorers

A unique field trip, designed for one or two-day participation, will be featured by ARA Explorers Club Oct. 24, 25, with a sortie to the In-Ko-Pah Gorge area seeking Indian artifacts, and general exploring of the little-seen region.

Larry Lesh is excursion chairman, and guides will be Roy M. Kepner Jr., County Department of Natural Resources, and Roy Hampton, Department of Agriculture.

The group will assemble in the first cafe across the bridge upon entering Jacumba at 7:15 a.m., Oct. 24. A caravan will depart for the gorge area at 8:45 a.m.

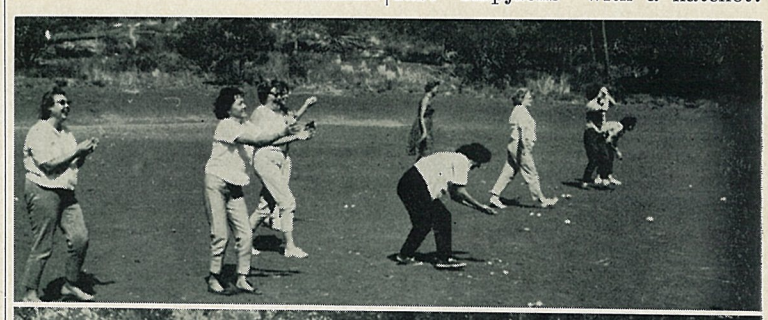
Dept. 958 Stages Annual Departmental Picnic at Pine Crest

More than 80 persons attended when Centaur reliability control engineering (Dept. 958) held its annual departmental get-together recently at CRA's Pine Crest facility near Julian.

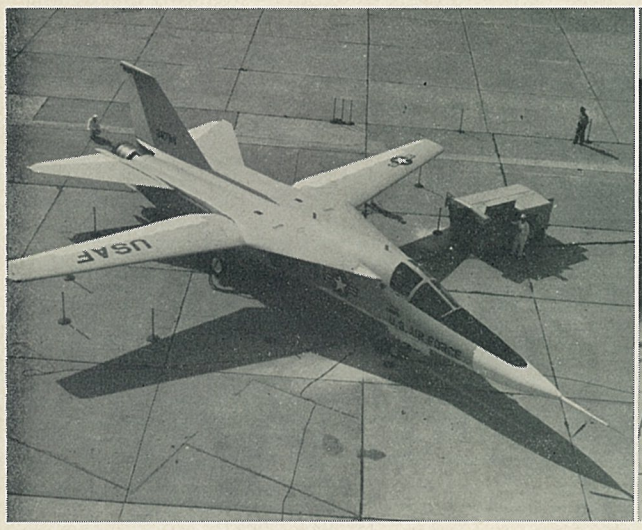
The Astro group, headed by Chief John Ona, spent the day with recreation and relaxation. Adults indulged in an "egg toss" (won by Mr. and Mrs. Fred Jacobsen); youngsters had other games, including a "balloon bustin' contest"; and the department's electrical group won a volleyball game from the mechanical section.

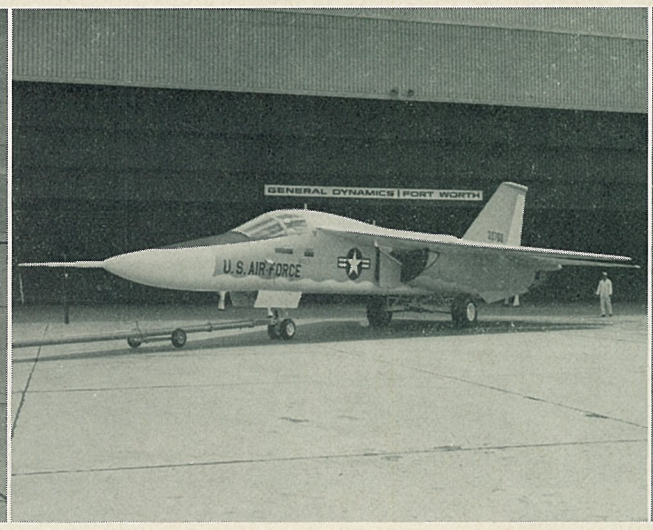
Dan Bain, who with Joyce Parent and Carolyn Saxton, was active in planning the affair, even returned with an ingenuity-illustrating anecdote:

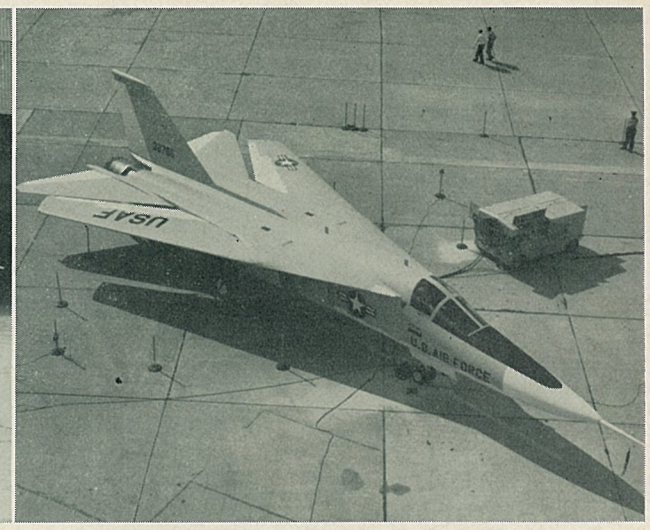
It seems one family arrived at Pine Crest early (if perhaps not fully equipped), and when Bain got there he found John Wickham (Dept. 958-6) turning his breakfast "flapjacks" with a hatchet!



FAMILY AFFAIR — Part of hilarity at recent Centaur reliability control engineering picnic involved "egg toss" pictured in top photo. Youngsters had their share of fun with "balloon bustin' contest" (below), other games and contests.







AT ROLL-OUT—Sensational F-111, variable wing fighter for Air Force and Navy, was unveiled last week in ceremonies at General Dynamics' Fort Worth division. Roger Lewis, General Dynamics president, and Frank Davis, GD/FW president, hosted distinguished guests that included Secretary of Defense McNamara.

10,000 Watch Roll-Out Of GD/FW's First F-111

The F-111—a fighter destined to open a "new dimension of flight" with its sweep-wing—rolled out at GD/Fort Worth Oct. 15, about two weeks ahead of schedule.

First flight for the two-man, all-weather plane is expected by year's end.

Upwards of 10,000—including employees on their lunch period, military and industry leaders, and the nation's press corps—were present.

The gray-and-white F-111 was towed to the speaker's platform north of the cavernous assembly building, then veteran flight-test pilots Dick Johnson and Val Prahl, aboard for the roll-out, swept the plane's wings once in their entirety.

The roll-out was narrated by Brig. Gen. J. L. Zoeckler, F-111 systems program director.

Other top military and industry leaders extolled the F-111 in brief speeches, both at the roll-out and at a briefing for press and special guests the evening before.

GD/FW President Frank W. Davis told newsmen and special guests at the briefing that the F-111 airframe is "essentially complete."

"All subsystems which must be installed for first flight are on hand," he said. "Substantially all parts necessary for installation of subsystems have been completed and are ready to install. Some have actually been installed."

Davis said the time remaining before first flight would be spent in installing and testing subsystems. Extensive instrumentation would also have to be installed and checked out.

No. 2 airplane, he said, would be available to share pre-first-flight ground testing.

He added that the first Navy F-111, due for delivery next spring, has begun to take shape in the fuselage and wing assembly fixtures.

Gen. B. A. Schriever, commander Air Force Systems Command, told the roll-out audience that the F-111 was a "quantum step forward in development of tactical air weapon systems."

"We expect to take advantage of the variable-sweep wing to select in flight those wing performance parameters which best fulfill each mission," he said.

In its various positions—from virtually straight out (16 degrees) to a tightly swept V (72.5 degrees)—the F-111 will be able to carry out a far wider spectrum of missions than any airplane before it.

With wings extended, the F-111 is ideal for short takeoff and landing, long endurance, heavy bomb loads, and long-range cruise.

With wings fully swept, the airplane takes on the appearance and flight characteristics of a supersonic fighter or bomber. It can operate above the speed of sound at either low or high altitude. This is also the folded condition for carrier handling.

The variable wing concept enables the F-111 to operate from small fields or aircraft carriers; penetrate to enemy targets or provide air defense at supersonic speeds; or fly intercontinental ranges without refueling or using auxiliary tanks.

"The world situation today, and in the foreseeable future, clearly calls for this kind of flexibility the F-111 promises," Davis said.

"We have known for years that an aircraft such as this with its variable sweep wing could open new dimensions of flight," Air Force Secretary Eugene M. Zuckert said at the roll-out.

"Our progress to date has been remarkable," he added. "We could ask for no more encouraging sign than this roll-out today, some two weeks ahead of schedule."

Roger Lewis, General Dynamics president, called the roll-out an "historic occasion—the birth of a new kind of airplane."

"We have beaten our own target date . . . despite the need to develop advanced technology and simultaneously to build a plane based upon that technology," Lewis said.

Lewis also spoke to Management Club members the evening before the roll-out at Ridglea Country Club.

"The Navy F-111, coupled with the Phoenix missile, will provide a weapon system to maintain air superiority whether operating from aircraft carriers or from fixed bases," said Secretary of the Navy Paul H. Nitze.

Secretary Nitze said the Navy F-111 would be capable of accompanying carrier attack aircraft out to their maximum range; long-range fighter interception; and individual strike missions.

"These aircraft will help to insure that our carrier weapons systems can fulfill their vital role in the 70s and 80s," he added.

Australian Ambassador John Keith Waller told the audience that the addition of two squadrons of F-111As would "add greatly" to his country's defense effort.

DOD Will Hear Cost Briefing

Department of Defense cost reduction and value engineering programs will be discussed by a panel of key personnel from the Office of the Secretary of Defense during a General Dynamics Value Control Seminar called for Nov. 4-6 at Washington, D.C.

Panel members will be G. E. Fouch, Deputy Assistant Secretary of Defense, Col. A. Powers, and Col. J. Alston, of the Office of the Secretary of Defense.

The DOD discussion will highlight the second day of the three-day meeting. J. N. Sowers, Corporate cost analyst, will outline GD cost reduction guidelines during the same session.

First-day agenda will be launched with a report on progress of GD value control activities by J. Y. McClure, Corporate director of reliability, quality control, value control, who will chair the seminar.

Sowers will conduct a company workshop session on cost reduction the closing day.

GD Value Control Panel members will take part in presentations and discussions dealing with various facets of value engineering and cost reduction during other sessions.

DEMPSEY OUTLINES SPACE TIMETABLE TO YEAR 2,000

Speaking to an academic convocation at University of Michigan earlier this month, where he received an honorary doctor of engineering degree, GD/Astronautics President J. R. Dempsey outlined a blueprint for the organized conquest of space.


J. R. Dempsey

In a timetable spanning 1965 (initial visits of Venus and Mercury) to the year 2,000 (exploration of Jupiter and Saturn), Dempsey proposed deep-space exploration to be carried out in progressive steps, each providing incrementally greater volumes of information.

The steps begin with instrumented fly-bys of the target planets, concluding with manned landings and finally, human colonies.

Dempsey advocated development of transportation systems for space exploration under a modular concept, with each vehicle expected to serve as an element of succeeding vehicular generations.

Defining astronautics as "man-directed activities whose ruling function is travel outside earth's atmosphere (100 nautical miles)," Dempsey said, "If science fiction can be described as real behavior in fantastic surroundings, then I suppose scientific reality in astronautics might be described as fantastic behavior in real surroundings."

He quoted English novelist Eden Phillpotts in concluding his remarks, saying, "We must remember that the universe is full of magical things, patiently waiting for our wits to grow sharper."

Dempsey, West Point graduate and WWII fighter pilot, earned a master's degree in aeronautical engineering from Michigan U. as a member of the first class of the Air Force post-graduate guided missile course.

He joined the company in 1953 and has managed Astronautics division since its inception.

Standard Time Will Return to California

Clocks in California will be turned back an hour this coming Sunday (Oct. 25) as the state returns to standard time to regain the hour "lost" in the spring.

Standard time goes into effect at 2 a.m. the last Sunday in October under legislation adopted two years ago to extend Daylight Savings Time an extra month.

General Dynamics employees at all California plants and offsite bases will report to work by the new time on Monday, Oct. 26.

Jr. Scientists Use Little Joe

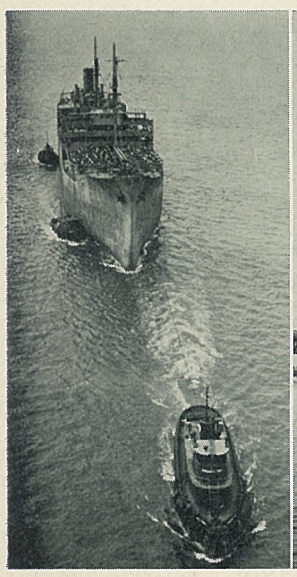
Two teen-age scientists placed high in recent national competition with their scale models of Little Joe II, faithful duplicates in miniature of Convair's launch vehicle being built for NASA's Apollo sub-orbital flight test program.

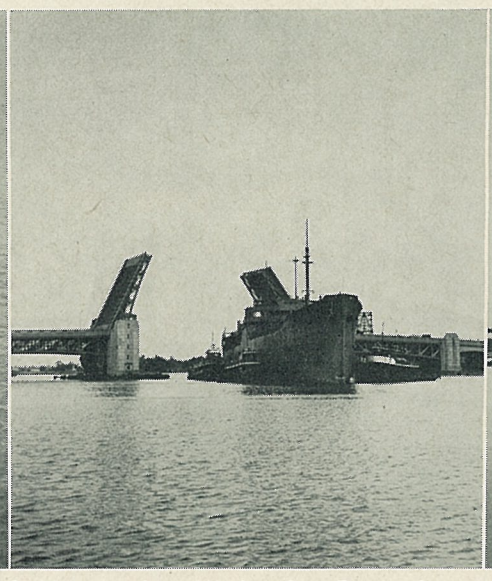
Gordon Mandell, 17, of Great Neck, N. Y., won the U. S. National Championship in model rocketry for overall points at the annual meet of the National Association of Rocketry held at NASA's Wallops Island testing station in Virginia. John Pollock of South Pasadena, Calif., placed fourth in a field of 30 contestants in scale competition at the same event.

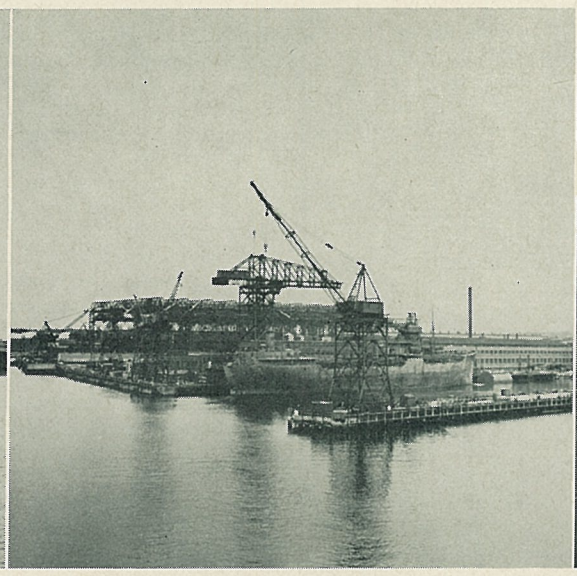
(Mandell and his Little Joe II model were publicized in Life magazine's Sept. 25 issue in an article devoted to Space Age Youngsters.)

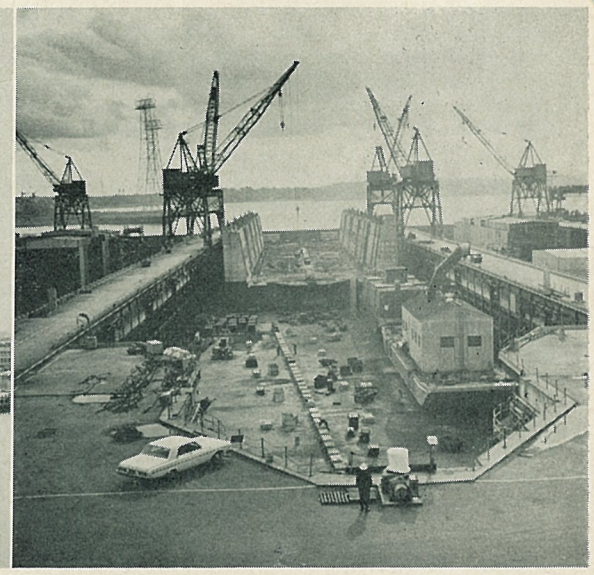
Both of the young men have been in correspondence with J. B. Hurt, Convair's Little Joe II program manager, for advice, specifications, and Little Joe II pictures. Pollock was a guest of Hurt's at the Oct. 8 luncheon of the Society of Automotive Engineers meeting in Los Angeles.

The man who has learned to disagree without being disagreeable has discovered the most valuable asset of a diplomat.









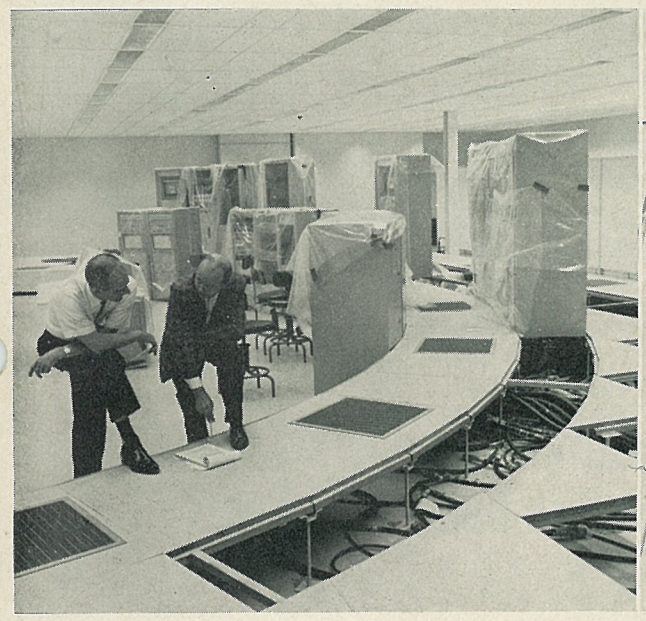
JOURNEY'S END — U.S. Navy tanker, Mission San Fernando, one of three destined for conversion to Range Instrumentation Ships for NASA's Apollo program, is pictured arriving at Electric Boat division's Quincy, Mass. yard. Three General Dynamics divisions are involved in $65 million conversion, Electronics, Electric Boat and Astronautics. Photo at far right shows dry dock in which task will be performed. Journey from Reserve Fleet at Ft. Eustis, Va., began Sept. 28, ended Oct. 5.

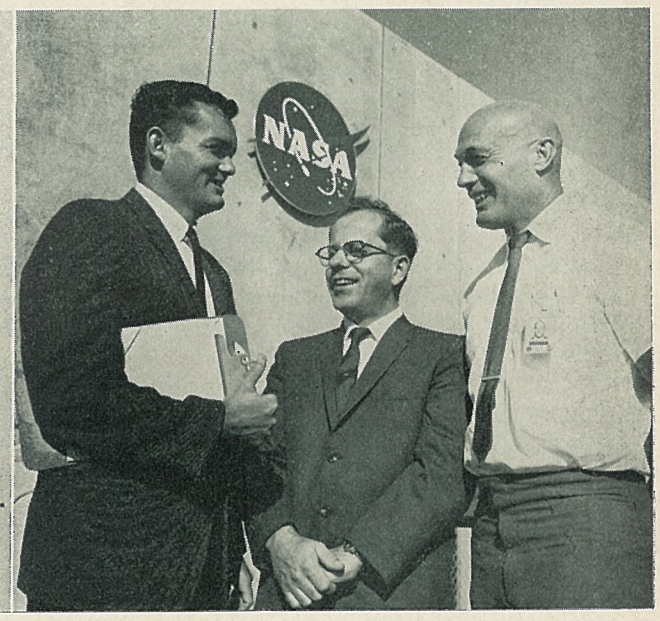
GD

ASTRONAUTICS EDITION

GENERAL DYNAMICS NEWS

Vol. 17, No. 24 PUBLISHED BY GENERAL DYNAMICS CORPORATION Wednesday, November 18, 1964





FOR MOON FLIGHTS — NASA's new Combined Systems Test Site at Astronautics is progressing, with completion set for January. In center is majority of crew now assigned to task from many different departments. At left is control center which will be exact duplicate of Complex 36 blockhouse at Cape Kennedy. At right are Fred Lee, chief of CSTS, Jerry Christ, assistant test conductor, and Bob Franklin, facility foreman.

New NASA Systems Test Site Equipped For Pre-Flight Check

Installation and validation of equipment in NASA's new Combined Systems Test Site (CSTS) continues to gain momentum at Astronautics with completion now slated for mid-January.

CSTS is a new NASA-owned and GD/Astronautics-operated facility where "dress rehearsals" for the all important Atlas-Centaur-Surveyor moon exploration will be carried out.

Actual Atlas and Centaur flight vehicles and Surveyor spacecraft destined for launch at Complex 36, Cape Kennedy, will first pass through CSTS for a thorough simulated flight routine. Only propellant and propulsion operations will be excluded as all other systems are made to perform exactly as they will in flights to the moon. This extensive pre-delivery testing will help reduce launch preparation time and insure all systems and all stages are compatible and functioning as a single unit.

Development of CSTS is being administered through the NASA resident office at Astro headed by Ronald Rovenger, and the GD/Astro Centaur program directed by Grant L. Hansen, vice president.

J. S. Harrison, Centaur manager of test operations, has gathered a veteran crew to install, validate and operate CSTS equip-

(Continued on Page 2)

Pen and Emblem Will Reward Eligible Cost Reduction Ideas

An added bonus for GD/Astronautics employees who submit an eligible Employee Suggestion (ES) or Cost Improvement Proposal (CIP) has been announced by D. R. Pardee, manager of division systems.

BONUS AWARD — Chic Cydney Garrison serves as backdrop to introduce new gold-finished ball-point pen with special ES/CIP clip to be presented GD/Astro employees who submit eligible Employee Suggestion or Cost Improvement Proposal. Award will be made for all eligible suggestions, whether or not they are subsequently adopted.

Effective as of Monday (Nov. 16), "suggesters" (both hourly and salaried) will be given a gold-finished ball-point pen with special ES/CIP clip emblem. The award will be limited to one pen per person.

Pardee emphasized that presentation of the useful and attractive pen is in addition to other aspects of the ES/CIP programs.

The pen will be awarded for eligible ideas, Pardee said, not only those which are subsequently approved for use.

A suggestion is eligible for the bonus award if it is directed toward cost reduction (without sacrifice of product quality), improvement of method, product design or tooling, or reduction of a safety hazard. Exceptions are listed in the Standard Practice (SP 2-18) governing the ES/CIP programs, and on the back of the ES form. A copy of eligibility rules will also be posted on each suggestion box.

Pens are awarded upon determination of eligibility by the suggestion review and evaluation section of division systems.

WINLUND TO READ SYMPOSIUM PAPER

General Dynamics participation in the National Symposium on Reliability and Quality Control, Jan. 12-14, 1965, at Miami Beach, Fla., will include presentation of a paper, "Cost Effectiveness Analysis for Optimal Reliability and Maintainability," by E. S. Winlund of GD/Astronautics.

Membership in C-T-C Now at 85 Per Cent

With returns 90 per cent complete, results of the recent Con-Trib-Club campaign indicate that 85 per cent of GD/Astronautics employees in the San Diego area have signed for membership.

Twenty-two per cent are Fair Share givers, pledging four minutes' pay per day to C-T-C, while the remaining 63 per cent have pledged a fixed amount to be deducted regularly from each pay check.

GD/Astro operations at Western Test Range (Vandenberg AFB) reports 78 per cent of employees there participating, with 4 per cent signed as Fair Share givers, while at Cape Kennedy (Eastern Test Range) five per cent are Fair Share participants and total membership stands at 75 per cent.

Quartet Spins As In Space For Five Days

Four GD/Astronautics research engineers last week completed five days "in a spin" during an experiment which examined a means of bringing "gravity" to outer space.

The four—James F. Brady, Aaron Wolgin, John L. Piatt Jr. and James R. Milligan—spent the period in GD/Astro's Manned Revolving Space Systems Simulator (MRSSS) as part of a study of man's adaptability to a revolving space station.

(Artificial gravity can be induced in manned space stations by spinning the vehicle to create centrifugal force, should this be necessary because of possible ill effects of prolonged weightlessness on human systems.)

The GD/Astro test was expected to yield significant data, since the 14 by 7 by 8-foot MRSSS chamber, mounted on the arm of a 20-foot radius centrifuge, is trunnioned to tilt so that the resultant of centrifugal and gravitational forces is perpendicular to the chamber floor. Rotational tests at other facilities, although some have been of longer duration, have not introduced this factor.

The subjects, with Brady as on-board test conductor, entered MRSSS Nov. 4 for pre-spin testing. Spin-up began the following day, gradually attaining a velocity of 6 rpm, which was maintained until the start of spin-down.

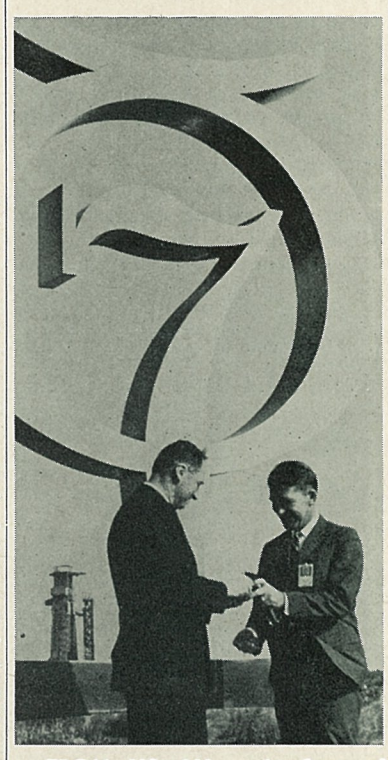
(Continued on Page 2)

Proj. Mercury Gift Unveiled

A monument to the free world's first venture into space was unveiled last week at Cape Kennedy, as a tribute to the government-industry team whose achievements comprised Project Mercury, and as a gift to the American people from General Dynamics Corporation.

The monument, a 13-foot high re-creation in stainless steel of the astronomical symbol for the planet Mercury, was unveiled in the presence of nearly 200 leaders from government, industry and the scientific community—including two of the Project Mercury astronauts—Walter Schirra and Gus Grissom.

General Dynamics President Roger Lewis, introduced by J. R. Dempsey, president of GD/Astronautics, presented medals reproducing the bas relief medallion, bearing likenesses of the seven astronauts (mounted on the monument base), to Dr. Edward C. Welsh, acting chairman and executive secretary of the National Aeronautics and Space Council.



FROM US ALL — At foot of monument, Roger Lewis, General Dynamics president, presented Astronaut Walter Schirra with medallion commemorating service to Project Mercury during dedication ceremony at Cape Kennedy.

Dr. Welsh will deliver one of the medals to President Lyndon B. Johnson on behalf of the Corporation. Lewis presented other medals to major figures in the Mercury program.

In his keynote address, Dr. Welsh referred to Project Mercury as "a symbol of effective government-industry teamwork" which "reveals how vital elements of a free society can join together to meet major challenges and to meet them successfully."

"General Dynamics Corporation is to be complimented," he said, "for its public service in erecting and donating this Mercury monument. It will stand as a reminder to us all that there is much more to be done and to be done well."

(Continued on page 6)

Astro Christmas 'Adopt a Family' Plans Progress

With approach of the Christmas season, members of many GD/Astro departments traditionally unite to "adopt" a needy family or provide special aid to a community welfare organization.

This year as before, employee services section of industrial relations (Dept. 130-5) will coordinate these efforts in order to avoid duplication and assure that a family does not go unaided while another receives assistance from two or more sources.

Additionally, supplemental funds may be required in some instances, and can be provided from coins recovered from the Bldg. 2 reflection pool, or those placed in "candle" receptacles to be located at plant exits.

Employee services is now compiling a list of needy San Diego families with detailed information as to number, age and sex of family members, and their particular needs. Employee services also wishes to be advised of any GD/Astro family in need of aid, and these will, of course, be given priority.

Groups or departments wishing to participate in the "adopt-a-family" program, or to nominate a family for aid, should contact Plant 71 ext. 2328 for additional information.

SPACE FOOD — Concentrated "astronaut food" is sampled by GD/Astro engineers who spent five days in division's Manned Revolving Space Systems Simulator (MRSSS). From left are Aaron Wolgin, J. R. Milligan, J. L. Piatt Jr., J. F. Brady. Fresh food was also provided during experiment.

Four Spend Five Days 'in Spin' Experiencing 'Living in Space'

(Continued from Page 1)

On Nov. 10, velocity was decreased in increments (spin-down) to permit test subjects to regain their "land legs" gradually. Total spin time was five days. Subjects then remained aboard MRSSS for a period of post-spin testing.

Test conductor for the study was Dr. Bernard D. Newsom, chief of aerospace medicine, assisted by Dr. Robert S. French, chief of human factors engineering. The study was conducted as part of GD/Astro life sciences program under Dr. Robert C. Armstrong, manager, reporting to Mort Rosenbaum, vice president-manned space systems.

MRSSS became a "home away from home" for the subjects with most supplies stored aboard, but with fresh food, clothing, etc., provided as required via a hatch in the chamber while it continued in motion.

The chamber is fitted with running hot and cold water. It is divided into two "rooms," one equipped with sanitary facilities and two bunks, the other with tables, chairs, freezer and food preparation facilities, etc.

Subjects adhered to a work-rest cycle of three hours on duty and five off, which allowed time for four meals a day, testing, group interaction, sleep and recreation (television, reading, cards, chess).

A monitoring station outside the chamber was manned around the clock, and physicians kept continuous watch on subjects' electrocardiographs, pulse and respiration rates. Blood pressures and temperatures were recorded periodically, and subjects were given a series of psychological and physiological tests during the study.

Log Book Entries

New 30-year man at GD/Astronautics is P. A. Carlson, Dept. 380-1.

Service Emblems

Service emblems due during the period Nov. 16 through Nov. 30.

Forty-year: Dept. 718-0, W. E. Koch.

Twenty-five-year: Dept. 250-1, F. S. Perkins; Dept. 382-2, W. B. Voosen; Dept. 504-2, S. R. Carpenter; Dept. 635-0, F. D. Applegate.

Twenty-year: Dept. 387-1, L. A. Johnson; Dept. 744-0, W. F. Heflin.

Fifteen-year: Dept. 143-3, Lena R. Thomas; Dept. 311-0, R. E. Coleman; Dept. 315-0, W. B. Ambrose; Dept. 581-2, R. A. Lynch; Dept. 673-0, B. C. Simmons; Dept. 693-1, J. P. McNelly; Dept. 759-0, G. E. Wilson; Dept. 835-2, M. W. Glithero; Dept. 970-1, Lawrence Potter.

Ten-year: Dept. 250, D. E. Merriam, G. F. Swarez; Dept. 373-3, D. V. Quinby; Dept. 451-0, A. A. Fitch; Dept. 503-0, K. A. Ehricke; Dept. 506-0, L. G. Chase; Dept. 524-3, H. T. Ryan; Dept. 547-0, T. J. Mawson; Dept. 568-1, A. S. Heubner; Dept. 592-0, James Kay Jr.; Dept. 673-0, S. L. Cowley; Dept. 694-0, J. F. Fischer Jr.; Dept. 831-1, Florine D. Utz; Dept. 961-8, T. G. Garrett Jr.; Dept. 978-3, A. H. Drown.

Retirements

WELNA—Henry P., Dept. 142-1. Seniority date, March 19, 1959. Retired Sept. 30.

Births

ECKERMANN—Daughter, Darci Lee, 6 lbs., 15 ozs., born Nov. 3 to Mr. and Mrs. Gerald C. Eckermann, Dept. 130-4.

Personals

We wish to thank you all for your kindness and sympathy at a time when it was deeply appreciated.

Frances Dowling and family.

HUNDRED TEEN-AGERS WILL BE GUESTS

Christmas will be Christmas, at least in a small way, for 100 needy San Diego teen-agers, when Employees' Con-Trib-Club, ARA, and Salvation Army combine efforts in an annual party Dec. 19.

The event will be staged in Astro cafeteria from 4 to 7 p.m., and youngsters will find entertainment, refreshments and gifts of clothing awaiting them. Gil Hutter, Prophet Co. manager, is chairman of this year's party.

In preparation, ARA commissioners and wives will hold a wrapping party in the cafeteria at 7 p.m., Dec. 14.

Employees wishing to help with this effort, to serve as hostesses for the Dec. 19 event, may contact Dixie Husted, Plant 71, ext. 2328, for details.

General Dynamics NEWS

Published by General Dynamics Corporation, One Rockefeller Plaza, New York, N. Y. 10020; with editorial headquarters at 3302 Pacific Highway, San Diego, Calif. 92112, P.O. Box 1950, telephone 296-6611, ext. 1071. Logan Jenkins, editor-in-chief.

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Fort Worth Editorial Offices, between Cols. 71-C and 71-D, Assbly. Bldg., GD/Fort Worth, Mail Zone T-63, P.O. Box 748, Fort Worth, Texas 76101. Telephone PErshing 2-4811, ext. 2961. Staff: Dave Lewis, editor; Mary Beck.

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* * *

Affiliated editions of General Dynamics NEWS are published in Rochester, N. Y., covering GD/Electronics and Stromberg-Carlson, editorial offices, 100 Carlson Road, HUbbard 2-2200, ext. 2555. Fred E. Voss, editor; and at Groton, Conn., covering GD/Electric Boat, editorial offices at Groton, 446-3129. Ed Caffrey, editor.

Systems Test Site Advances

(Continued from Page 1)

ment. Fred Lee is CSTS chief; Jerry Christ, assistant test conductor; and Bob Franklin, facility foreman.

About 35 employees are currently working at CSTS. Some are already assigned to Dept. 973 (CSTS operations), while others are "on loan."

Other departments are turning out necessary equipment and components. Console manufacture and assembly is being done by Dept. 780, while tooling (Dept. 451) and engineering test support (Dept. 756) are handling associated tasks.

Department 835 (material operations) has been responsible for location and delivery of some 2,862 separate line items, including 177 EIDs (End Item Delivery) and 673 cable assemblies.

A "lion's share" of cleaning and testing of tubing and assemblies to specification has fallen to Dept. 759.

Mechanical system installation requirements call for 3,290 feet of tubing; 180 feet of unistrut; 832 "B" nuts and sleeves; 2,511 pieces of miscellaneous hardware; 200 feet of piping and 365 feet of air conditioning insulation; 35 square feet of steel plate; and 154 square feet of aluminum plate.

Atlas vehicles will be positioned horizontally with Centaur and Surveyor vehicles mounted vertically. They are tied together by electrical mating.

CSTS is the first known facility designed specifically to accommodate all stages of a space vehicle for unified ground testing. Its control center is an exact duplicate of the Complex 36 blockhouse at Cape Kennedy.

Sixteen Earn CR Recognition

Sixteen Centaur project employees recently joined the ranks of GD/Astronautics personnel who have received recognition for contributions to the division's Cost Reduction program.

They were presented with certificates of commendation by Grant L. Hansen, vice president and program director.

The awards represented third-quarter savings of $882,475 on 17 different CR projects, and brought to $1,084,000 the total savings achieved in Centaur during the first nine months of 1964.

Recently implemented projects ranged from one valued at $454,410 in savings initiated by F. M. Boley, technical services supervisor, to a project completed by L. R. Potter which saved $539.

Among items with larger savings was a recommendation from O. C. Priest, technical services general supervisor, which is credited with savings of $329,400.

Other Centaur savers were M. L. Male, the teams of H. M. Brown and T. L. Rose, C. B. Simmons and E. E. Barringer, G. W. Norris and B. L. Warren, E. W. Koester, E. W. Avlon, C. E. Plummer (two implemented projects), A. J. Mumford, L. W. Fitzgerald, E. B. Smith.

RECOGNIZED — Eight GD/Astro suppliers were recognized during recent Supplier Reliability Control Seminar with special plaque symbolizing significant improvement in quality performance of their products. Typical was K. G. Stone, president of Kinetics Corp., Solana Beach, left, who accepted plaque from P. I. Harr, GD/Astro director of reliability control.

Astronautics Suppliers Confer On Product Reliability Boost

Executives representing more than 500 GD/Astronautics suppliers assembled in San Diego over a five-day period last month for a Supplier Reliability Control Seminar sponsored by GD/Astro.

The program was designed for reciprocal benefit: GD/Astro and its customers stood to profit through potentially increased reliability of the division's products, while suppliers helped themselves through the opportunity afforded them to learn more of GD/Astro and customer requirements.

Sessions convened daily with a welcome from H. E. Moose, GD/Astro director of material. P. I. Harr, director of reliability control, then introduced the program and issued a statement of seminar objectives.

"The more materials we receive without defects from our suppliers, the better able we are to increase the quality and reliability and reduce the costs of our products," Harr explained. "We hope that this seminar will assist suppliers in a better understanding of our current requirements and the procedures by which we can achieve a higher level of reliability."

Daily agenda included a presentation on procurement policies and practices by R. N. Babcock, chief of vendor research and value control; on a supplier quality program by L. I. Medlock, Centaur reliability control manager; and on GD/Astro's Do Good Work program by W. E. Magnuson, chief of special projects.

A management panel discussion of supplier quality/reliability problem areas featured M. R. Seldon (moderator), assistant to the reliability control director; D. E. Moore, chief of quality assurance division, AFPRO; R. A. King, chief of quality assurance section, Astro NASA office; E. J. Seski, manager of subcontract management; and guests, E. T. Clare of Cohu/Kintel, and I. Dagan, Rohr Corp.

Seminar displays included "Visual Impact Management" (a short, short course in AF 375 series manuals), value control projects, small business posters, and Do Good Work.

Luncheon speakers, Monday through Friday, were E. D. Bryant, GD/Astro vice president-operations; J. Y. McClure, General Dynamics Corporate director of reliability, quality control, and value control; Col. M. K. Andresen, AF plant representative; Ronald Rovenger, heading the local NASA office; and D. P. Germeraad, life sciences deputy manager.

During the course of the seminar 15 suppliers were presented with certificates noting six months of rejection-free performance, while eight others received specially prepared plaques in recognition of significantly improved product quality performance during the first half of 1964.

'Equal Opportunity Day' Is Set Aside

Tomorrow (Nov. 19) is "Equal Opportunity Day," a date designated annually by the National Urban League as part of the organization's effort to eliminate racial misunderstanding through interracial teamwork and cooperation.

M. V. Wisdom, director of industrial relations and a board member for San Diego Urban League, has invited all GD/Astro employees to give special consideration to this observance.

"Equal Opportunity Day was established by the Urban League to focus attention throughout the U. S. on positive efforts to insure fair and equal treatment for all citizens, regardless of race, color, religion or national origin," he explained.

"For GD/Astro, it provides an occasion to reaffirm employment policies traditionally pursued by all divisions of General Dynamics Corporation," Wisdom said, "and offers a chance for personal effort to extend this attitude into all aspects of our human relations — to make equal opportunity a way of life."

CENTAUR SAVERS — Vice President G. L. Hansen, standing second from left, was joined by Ronald Rovenger, head of NASA office at GD/Astro, standing left, during ceremony in which he presented Cost Reduction certificates to 16 Centaur project members.

Safety Standings

Division achieving best record:

Current month: (1) Pomona, (2) Convair, (3) Electronics-SD.

Year to date: (1) Pomona, (2) Convair, (3) Electronics-Roch.

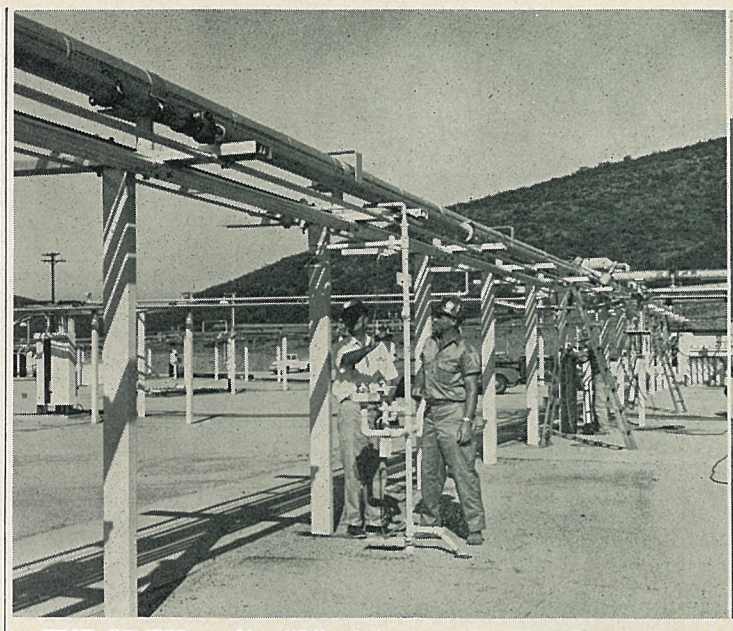
Division showing best improvement:

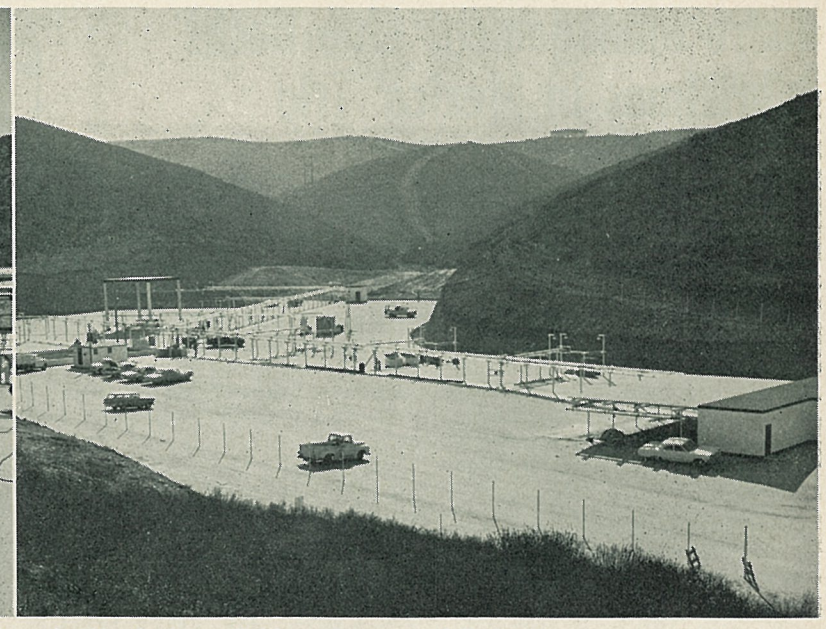
(1) Pomona, (2) Canadair, (3) Convair.

SEVERITY RATE IMPROVES 30% DURING YEAR

Although overall accident severity rate among General Dynamics divisions has shown a 30 per cent year-to-date improvement, as of Oct. 1, frequency rate has improved only 4 per cent.

"This margin is precariously slim," A. A. Hendrix, vice president-industrial relations, commented. "Since the last three months of last year averaged only 1.69 in frequency, it is obvious that we must post some solid gains just to stay even. And, as you know, our goal calls for a lot more than that."





TEST CENTER — Site "B" of Astronautics Test Center near San Diego is nearing completion. Tests of liquid hydrogen and other super cold gases will be conducted here. In photo at left, Al Ward, Astro field engineer, and Ernie Morgan, construction contractor superintendent, inspect one of emergency shower units for employee protection.

General Dynamics Plants Close Nov. 26

General Dynamics people will join the rest of the country in observing Thanksgiving Day next Thursday (Nov. 26). Plants will be closed for the one day only, with regular work hours on Friday as usual. Necessary maintenance and security personnel will be notified if they are required to work on the holiday.

NATIONAL SECURITY COURSE COMPLETED

Three GD/Fort Worth employees recently earned certificates for completing the correspondence course in "The Economics of National Security."

They are Byron A. Kress, manager of nuclear missile and space systems, R. G. Atchison, estimating supervisor, and E. L. Schultz, B-58 test programs supervisor.

Sponsored by the Industrial College of the Armed Forces, the graduate-level course deals with inter-relationship of the nation's economy and national security.

Maj. Gen. W. S. Steele, deputy commandant, School of Extension Studies, presented the certificates.

VALUE ENGINEER TO PRESENT PAPER

Saul D. Lepen, GD/Astronautics value engineer in Dept. 521-0, will present a paper, "Cost Targeting for Short Term Low Production Projects," during a VE symposium Nov. 18 and 19, held by Army Missile Command, Redstone Arsenal. Lepen will also participate in a question-answer panel following formal presentations.

WILKENS ELECTED TRUSTEE FOR CIC

D. C. Wilkens Jr., Convair director of industrial relations, was elected to the board of trustees of the Citizens' Interracial Committee of San Diego County late last month. Twelve new members were named to the 29-member board by written ballot from the CIC voting membership.

PERRINE ELECTED ASSN. DIRECTOR

C. D. Perrine Jr., GD/Pomona executive vice president, was elected a director of the Los Angeles Council of Western Electronic Manufacturers Association last month. Newly-elected directors from each of the five WEMA councils will meet in San Diego Nov. 24 to elect the association officers for 1965.

Site 'B' For Hydrogen Testing Nearly Ready at New Center

Construction is nearing completion on the first facility being built in the new General Dynamics/Astronautics Test Center northeast of San Diego.

This is Site "B" slated for important liquid hydrogen testing.

Construction began in June and will be completed in mid-December.

In the center of the facility will be two huge storage tanks. One, weighing 30 tons, will hold a maximum of 13,000 gallons of super-cold liquid hydrogen. A smaller tank will contain liquid nitrogen.

Fanning out from the tank area is an overhead system of stanchions supporting all fuel, oxidizer and utility lines. For instance, pipes will carry liquid hydrogen, liquid nitrogen, electricity, water, vacuum lines, compressed air, helium and gaseous nitrogen.

Because both liquid hydrogen and liquid nitrogen are cryogenics and remain in super-cold state, special provisions are made for their transfer. Piping through which these materials flow is vacuum jacketed or heavily insulated to prevent excess "boil off." Special graphite expansion mounts are located at key points.

There are seven major test slabs. Each slab and the floors of test buildings are both non-sparking and static disseminating.

At one end of the stanchion system is the facility's largest structure, an instrumentation building. It will house major facilities for instrumentation, offices, rest room, a special indoor test cell and a storage area. Attached to one side is a large patio-type area in which other tests may be performed.

A cryotherm blockhouse with eight-inch-thick walls is located in another area. A nearby components building rounds out major site structures.

Site "B" includes some 21,500 square yards of AC paved area completely fenced. It is in a canyon area just off the main Center access road.

Astro's plant engineering department designed the facility and has supervised its construction by the L. J. Ninteman Co. Al Ward is the Astro field engineer; Wes Muse the project engineer.

General Dynamics owns the 2,420-acre Test Center located just north of the government-owned and Astro-operated Sycamore Canyon site (**GD/NEWS**, Aug. 8, 1963).

Scheduled for development over a period of years, the Test Center will allow Astro to centralize its now scattered test program with room for expansion in future years. Original master plans adopted for the area called for facilities in which to conduct liquid hydrogen, systems, propulsion and exotic propellant tests.

Nearby on Test Center property will be a new Redeye missile final assembly and test facility to be built and operated by GD/Pomona. A contract has been issued for grading of this site and its access road. Building contracts are expected to be issued soon (**GD/NEWS**, Oct. 21).

GD/Pomona now expects to employ a maximum of 25 persons (by late 1965) at the facility.

Redeye on Display At Army Gathering

Redeye, world's smallest guided missile system, is on display at the annual meeting of the Association of the U. S. Army in Washington, D. C. The three-day convention ends today (Nov. 18).

GD/Pomona's exhibit featuring Redeye is sharing booth space with Canadair.

Redeye, a shoulder-fired missile system, was developed for the Army and Marine Corps.

A GD/Convair display features movies of its new Charger multi-mission plane.

"Ever have days when you can't get to your files?"

A Quote: "The Price of Success"

(The following "quote" was written many years ago by Dr. Joseph F. Johnson, but the sentiments are as true now as then.)

* * *

"I often wonder what it is that brings one man success in life, and what it is that brings mediocrity or failure to his brother. The difference can't be in mental capacity; there is not the difference in our mentalities indicated by the difference in performance. In short, I have reached the conclusion that some men succeed because they cheerfully pay the price of success, and others, though they may claim ambition and a desire to succeed, are unwilling to pay that price.

AND THE PRICE IS:

"To use all your courage to force yourself to concentrate on the problem in hand, to think of it deeply and constantly, to study it from all angles, and to plan:

"To have a high and sustained determination to put over what you plan to accomplish, not if circumstances be favorable to its accomplishment, but in spite of all adverse circumstances which may arise—and nothing worthwhile has ever been accomplished without some obstacles having been overcome.

"To refuse to believe that there are any circumstances sufficiently strong to defeat you in the accomplishment of your purpose.

"Hard? I should say so. That's why so many men never attempt to acquire success, answer the siren call of the rut and remain on the beaten paths that are for beaten men. Nothing worthwhile has ever been achieved without constant endeavor, some pain and constant application of the lash of ambition.

"That's the price of success as I see it. And I believe every man should ask himself: Am I willing to endure the pain of this struggle for the comforts and the rewards and the glory that go with achievement? Or shall I accept the uneasy and inadequate contentment that comes with mediocrity? Am I willing to pay the Price of Success?"

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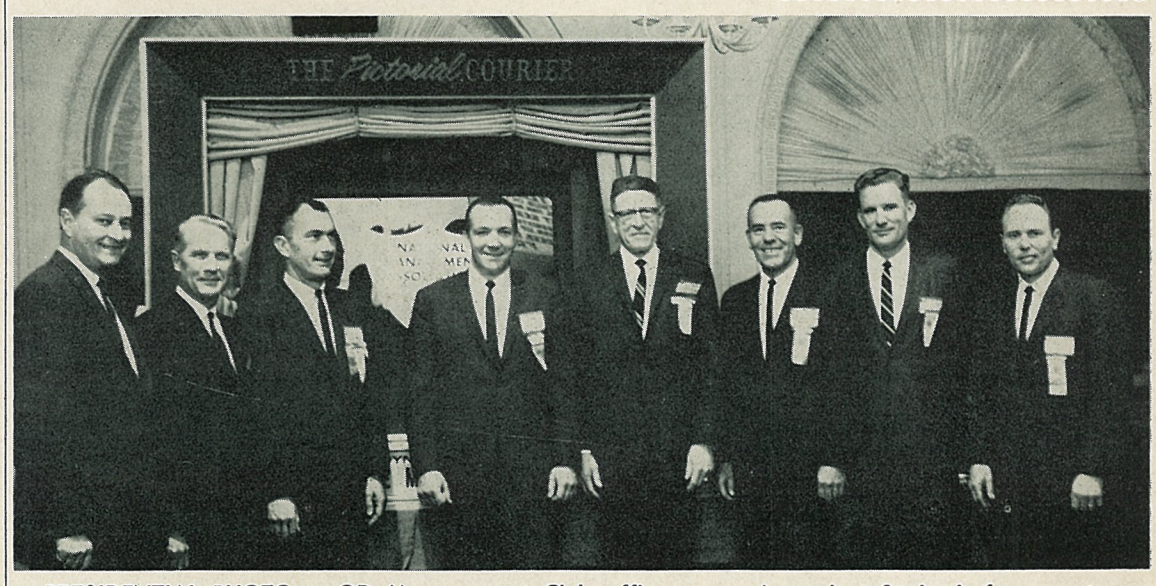


PRESIDENTIAL PHOTO — GD Management Club officers are pictured at St. Louis for recent convention. Left to right: John Payne, GD/FW, Zone B vice president; Ralph Bauman, Astronautics, Zone A director; Don Slingsby, Astro club president; Paul M. Neuman, GD/Electronics (Rochester) club president; R. Arch Dutton, GD/Pomona club president; William J. Wood, GD/Convair club president; F. B. Thompson, GD/FW club president; and Bob Keltner, GD/Vandenberg club president.

Astro Management Club Backs 'Christmas in Mexico' Trip

"Christmas in Mexico," a specially-arranged two-week holiday trip into the neighboring country, is sponsored for all General Dynamics people by Astronautics Management Club.

Tour dates are from Dec. 19 to Jan. 3.

James Hardison of Convair will conduct the trip which will follow, for the most part, the route of his summer tours to Mexico, which have proved popular with GD travelers during the last four years.

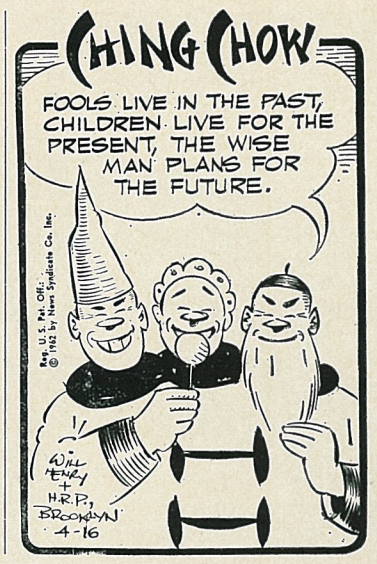
Interested persons may see a slide showing in color of cities and sights in store on the Mexican tour, Nov. 27 at 7:30 p.m. in ARA Clubhouse, Room A.

Departure will be from Mexicali on an air-conditioned train. Two days are reserved for sightseeing in Guadalajara. Christmas will be celebrated with a traditional pinata party in Mexico City during the five days there. Side trips around the capital will take the tourists to Xochimilco, Chapultepec Castle, University of Mexico, Pyramids. A day in Taxco and two in Acapulco will follow before the return trip home. New Year's Day will be highlighted with a party on the train.

Entire cost is $365 for transportation, hotel accommodations, most meals, and sightseeing. Financing can be arranged through Bank of America, if desired.

Reservations and ten per cent of the charge must be submitted by Nov. 30.

For details and reservations call Bob Emerson, Astro main plant, ext. 2335, or Hardison, home phone, 276-5805.



Income Tax Class Planned

A subject close to the heart, or checkbook, of all wage-earners—how to prepare income tax returns—will be taught in a three-session course at GD/Convair, starting Dec. 1 under sponsorship of Convair educational services.

The class meetings, open to all General Dynamics people as well as the general public, will be Dec. 1, 8, and 15 from 4:30 to 7 p.m. Registration will be made at the first class at Convair Plant 1, Bldg. 14, Room 8. Enrollment fee is $2.

Instructor is Gerald V. Baughman, formerly with Convair accounting department, who has operated his own tax practice the last ten years.

He will cover six topics—What is Income?, Income Exclusions, Dependents, Itemized Deductions, Calculation of the Income Tax, Conversion from Federal to State.

The course is offered as a part of the adult education program of the Hoover Adult High School.

A similar course in income tax preparation will be presented for Convair Management Club members in January.

Richard Ellis Wins In Junior Shooting

Richard Ellis garnered the National Rifle Association championship medal for his performance at Astro Junior Rifleers club championship matches held Oct. 31 at CRA Gun Range.

Ellis outshot all young Astro and Convair marksmen competing.

Rod Lemley was first and Mike Frazier, second, in Class A. Bob Eaton was winner in Class B and Doug Andrews, runner-up.

Cary Nichols topped Class C and Don Galyardt won Class D.

In the tyros class for beginners Paris Hoffman was first and Barbara Esparza, second.

Junior Rifleers will shoot it out in a turkey match this Saturday (Nov. 21).

Garden Club Plans Christmas Party

Garden club members from Astro and Convair and their families will stage a Christmas party especially for the youngsters on Wednesday (Dec. 2) in Balboa Park's Floral Association Bldg.

Meeting time has been set up to 7 p.m. for the benefit of the children with early bedtimes.

Santa Claus will have treats for the small fry and adults will exchange gifts, men for men, women for women, etc. A wide range of door prizes will highlight the drawing. There will be turkeys, plants, pottery for lucky number holders.

'Needle in Haystack' Technique To Serve NASA's Lewis Research

A technique which can literally "find a needle in a haystack" (without disturbing the stack in the process) is being applied to the nation's space programs by General Atomic division.

The technique, called neutron activation analysis, is being used by General Atomic for oxygen identification in alkali metals, under contract to NASA's Lewis Research Center. The method involves spectrometric examination of energy released by chemical elements which have been exposed to neutron radiation.

Lewis Research Center is presently studying liquid metals whose excellent heat transfer properties make them superior working fluids for space power systems. Potassium and other alkali metals which are liquid within a few degrees of room temperature are slated to play a key role in future spacecraft needing megawatt electric power plants on board.

General Atomic's neutron activities analysis is used to determine the amount of oxygen present, since oxygen contributes a corroding effect to the liquid metals.

Activation analysis can now pinpoint as few as three oxygen molecules hidden among a million molecules of potassium!

General Atomic credits activation analysis with making oxygen determinations faster, more precisely, non-destructively, and with better sensitivity—with almost an order of magnitude in precision and sensitivity—than was possible a year ago.

Besides the space agency, General Atomic reports that manufacturers of high-purity steel and alloys have expressed interest in rapid, accurate oxygen content determination, since oxygen in steel is important to its strength, ductility and durabiliy.

Activation analysis techniques have been used in archaeology to provide precise dating of prehistoric relics; in criminology their results have been admitted as court evidence and used in at least one murder conviction in Canada.

In a recent activation analysis on a strand of Napoleon's hair, they gave credence to an historical suggestion of foul play in the exiled emperor's demise. The spectrometer clicked up a score of 15 times the healthy arsenic content!

Junior Science Club Sessions Planned

General Dynamics youngsters and their friends are welcome to participate in activities of ARA Junior Science Club, whose educational programs are designed to appeal to the 10 to 18-year age bracket.

Nov. 20 at 7:30 p.m. the group will meet at Mission Bay High School for a program, "Graphic Arts in Motion."

Physicist Carl J. Schultz of GD/General Atomic's experimental physics department, will discuss "Atomic Energy" at a Dec. 4 session, 7:30 p.m. in ARA Clubhouse.

Details on the group and its functions are available from Keith Sears, Astro ext. 2328.

Volunteers Sought To Restore Plane

A call is out for volunteers to help restore a Convair-built XF2Y-1 Sea Dart for display in the San Diego AeroSpace Museum in Balboa Park.

The experimental delta-wing jet seaplane built by Convair over 10 years ago is stored at Fisher Aircraft Co. where restoration work will be done. It was donated to the Museum last year by the Navy.

Anyone wishing to donate time to the project is asked to contact Mrs. Ruth Staley at the Museum, phone 234-8291.

Enrollment Date For State Dec. 15

General Dynamics employees planning to enroll in late afternoon and evening courses at San Diego State College during the spring term are reminded that admission or readmission deadline is Dec. 15.

Students who were not registered during the fall semester must be formally admitted and have a registration priority before entering spring classes.

Information is available from the college admissions office, 284-6871.

Shun Optional Car Insurance

A misunderstanding or unfamiliarity with company policy which has occasionally resulted in unnecessary expense to GD/Astronautics travelers has been highlighted by L. F. Moeller, manager of general accounting.

The problem concerns purchase of optional collision insurance (covering the $100 deductible fee) on automobiles rented for company business.

Moeller stressed that employees authorized to rent automobiles should NOT purchase this optional insurance offered by the rental agency, since GD/Astro provides coverage for rented vehicles, as well as company-owned cars.

Purchase of additional insurance is disallowed as an expense account item and is charged to the employee.

Should collision damage occur to a car rented for company business, the employee involved should pay for it (normally only the $100 deductible amount) and obtain a receipt.

He will be reimbursed when he submits this receipt, PLUS a completed accident report, attached to his expense report.

WEIGHT ENGINEERS WILL MEET NOV. 19

San Diego chapter, Society of Aeronautical Weight Engineers (SAWE) will meet tomorrow (Nov. 19) at the Catamaran Hotel to hear Eric Propper of Revere Corp. discuss "Mass and Force Measurements." Social hour begins at 6 p.m., dinner promptly at 7.

Annual Flower Show Attracts Big Entry List of Fall Blooms

An Astro man and a Convair woman were singled out for special honors for their exhibits in General Dynamics' annual Fall Flower Show which displayed 310 entries and drew several hundred spectators to the Floral Association Bldg. in Balboa Park on Nov. 1.

Arnold Carroll's large white single chrysanthemum won him the ARA best bloom trophy. He is in Astro Dept. 141-2. LeVonne Splinter of Convair Dept. 2-0 was recognized on the Ona Mae Carroll Memorial plaque for an artistic arrangement of yellow pompons, sour dock, cattails in a hammered copper bowl.

ARA Commissioner Everett Henderson, CRA Commissioner E. L. Zimmerman and Convair's acting commissioner, Henry Boyd, were in charge of the annual showing.

Best of show winners were: Carroll, Zimmerman (Convair Dept. 131), Boyd (Convair Dept. 141), Anna T. Cunnion (Convair Dept. 131), Carolyn Buman (Astro Dept. 512-0), Mrs. Splinter, Janice Zimmerman, 13-yr.-old daughter of Commissioner Zimmerman.

First, second, third places in individual classifications went to:

Single large mum: White—A. Carroll, J. E. Henderson, A. Carroll; Pink—H. S. Boyd, A. Carroll, E. L. Zimmerman; Red—H. S. Boyd, A. Carroll; Yellow—H. S. Boyd, A. Carroll, J. E. Henderson; Lavender—H. S. Boyd, A. Carroll, Grace Zimmerman.

Three large mums: White—A. Carroll, A. Carroll, H. S. Boyd; Pink—A. Carroll, E. L. Zimmerman; Red—H. S. Boyd, E. L. Zimmerman, A. Carroll; Bronze—Ray Sharman; Yellow—H. S. Boyd, A. Carroll, Margaret Boyd; Lavender—E. L. Zimmerman, Ray Sharman, Grace Zimmerman.

Three pompons-cushion: White—H. S. Boyd, C. H. Splinter, John Volper; Pink—A. Carroll, Dennis Zimmerman, Ray Sharman; Yellow—C. H. Splinter, A. Carroll, Carolyn Buman; Bronze—Anna Cunnion, C. H. Splinter, LeVonne Splinter; Lavender—C. H. Splinter, Anna Cunnion, Carolyn Buman.

Pompon daisy: White—J. R. Buman, E. L. Zimmerman, Grace Zimmerman; Pink—Ray Sharman, LeVonne Splinter, Mary Short; Red—Carolyn Buman, Mary Short; Bronze—John Volper, Ray Sharman, Janice Zimmerman; Yellow—C. H. Splinter, J. R. Buman, T. J. Cunnion; Lavender—Ray Sharman.

Button mums: 1 stem—H. S. Boyd, A. Carroll, T. J. Cunnion; 3 stems—A. Carroll, H. S. Boyd, J. R. Buman; 6 stems—H. S. Boyd, A. Carroll, A. Carroll.

Arrangements: Miniature—Bill Spann; Low—Helen Spann, Anna Cunnion, Norman Bradshaw; Medium—Madeline Volper, Grace Zimmerman, Norman Bradshaw; Tall—LeVonne Splinter, Madeline Volper, Carolyn Buman; Dry—Margaret Boyd, Carolyn Buman, Marjorie Hornsby; Artificial—Madeline Volper.

Children's: Both age divisions—Janice Zimmerman.

Roses: Red — Carolyn Buman, Ray Sharman, Mrs. Felix White; Yellow—Felix White, Mrs. White, H. S. Boyd; Pink — Mrs. White, Grace Zimmerman, Mrs. White; Granada—Carolyn Buman; Felix White, Mrs. White; White — no first place, Mrs. White, H. S. Boyd; Orange—Mrs. White, Carolyn Buman, H. S. Boyd; Mauve—Mrs. White, Ray Sharman, H. S. Boyd; Montezuma—H. S. Boyd, Mrs. White, Felix White; Peace—Mrs. White, H. S. Boyd.

Corsages: Tropical—Bill Spann, Carolyn Buman; Chrysanthemums — Carolyn Buman, Helen Spann, Bill Spann; Other Flowers—Ken Spann, F. H. Baldwin.

Industrial Tourney Dominated By General Dynamics Bowlers

General Dynamics' keglers took top spots in the annual Industrial Recreation Council bowling tourney the weekend of Nov. 7-8, winning first in both men's and mixed divisions and individual men's series and game scores and individual women's series.

Twenty-three of the 84 teams competing were fielded by Astro, Convair, GD/E, S-C, and General Atomic. Altogether, 420 bowlers from 16 IRC member organizations took part, said Mike Brooks of Astro, tourney manager.

Astro's Team No. 5, captained by Forest Erwin, rolled 2,785 pins for high handicap score in the men's division. Other team members were Erwin's son, Mike, Bert Lee, Tony Zullo, and Bob Lange.

"Misfits," a combined Convair-Astro team captained by Brooks, won the mixed division with 2,620 total pins. The same five won the mixed division title five years ago, the first year they competed, but had been just in the running ever since.

Members were Brooks and wife, Frances, Bill and Evelyn Carson, and George Lange.

Two Astro teams also were in the money. "Hotshots," led by John Sentovic, was third in men's division and "Ifs," captained by Larry Atwell, fourth.

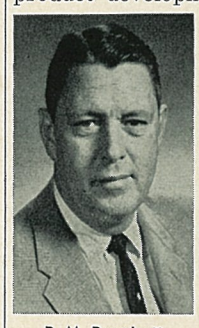
Davidson Bros. five-man team was fifth. Members were John Adams, captain; Don Stewart, Alex Kuhnel, Bud McLaughlin, Bob Pearson.

Evelyn Carson of Convair was high for individual ladies' series score, 538 scratch. Zullo won high individual men's honors in both scratch game (279) and scratch series (666).

Trophies were presented at the awards dinner at El Morocco Restaurant last Saturday night.

PROPHETT DIRECTS ADVANCED PRODUCTS

P. M. Prophett has been appointed director of advanced product development at GD/Convair, effective Nov. 2, C. W. Frick, vice president-engineering, announced.


P. M. Prophett

Prophett, who joined the company at Convair in 1942, directed activation of operational Atlas bases for Astronautics and, more recently, has held the post of Astro director of special projects in systems development department.

Before joining Astronautics in 1961 he was assistant chief engineer-flight test at Convair. Prior to that he had headed Convair's F-102 flight operations and served as chief of engineering flight test from 1955 to 1957.

In his new assignment he will head up Convair advanced product development activities.

Reporting to him are the following requirements engineers: J. R. Burtt, USAF and NASA; W. R. Lee, Army; R. L. Runnalls, Navy; H. J. Richardson, USAF; R. L. Wintringer, commercial projects and foreign sales; and W. D. Wood, Navy.

Annual Game Contest Opens

Annual big game contest is open now for all General Dynamics nimrods who have bagged the big, big ones this season.

Entry forms to establish eligibility in the drawing for valuable prizes, set this year for Dec. 8, now are at all employee services and industrial relations outlets at Astro, Convair, GD/Electronics, and Stromberg-Carlson.

All GD employees and members of their families have a chance in the drawing sponsored yearly by CRA and ARA. The number and value of the prizes depend upon the number of entries turned in before drawing date.

Any larger game animal, such as elk, moose, deer, bear, javelina, may be entered. Type of game, date of shooting, weapon used, total points and spread, weight, location of shooting, license number, and witness' name must be included on the application forms.

Details may be obtained from CRA Gun Club Commissioner Jack Swank, ext. 580, Plant 1, or ARA Commissioner Ezra Johnson, ext. 3388, Astro Plant 71.

Salvage Schedule Set For Month

Salvage yard schedule at Convair and Astro sites for the next four weeks is:

Convair—Nov. 21, Dec. 5.

Astro—Nov. 28, Dec. 12.

43 Certificates Note Savings

Forty-three operations department employees at GD/Astronautics recently received certificates from Vice President E. D. Bryant recognizing their participation in the division's Cost Reduction program.

Through Sept. 30, operations personnel had implemented 258 Cost Reduction and Methods Improvement projects with total audited savings of $6,181,314—exceeding the department's 1964 savings target by nearly $3 million.

In the current period, CR projects closed out ranged in value from one credited jointly to Bryant and R. C. Harbert ($997,099) which resulted from a major departmental realignment, to one implemented by George Landy, Dept. 733-0, concerned with degreaser improvements ($1,081).

Perhaps more typical were projects originated by J. R. Givens, Dept. 410-0, and C. C. Pope, Dept. 403-0.

Givens' project saved $16,254 by eliminating several manual operations for tool status and location reporting through revised design of key punch cards used in this procedure.

Savings of $51,977 were credited to Pope for originating extensive revisions to cycle check requirements which lengthened the interval between tool inventory/cycle check periods, and eliminated certain tools from the check schedule.

Those recently presented CR certificates by Bryant included:

Dept. 210—R. A. Ames.

Dept. 250—R. F. Grimshaw, S. E. Chavez, J. McMinn, M. Goolsby, N. L. Currier, W. C. Downs (two awards), C. L. Hartshorn, D. Buck, D. E. Merriam, C. W. Carlson, J. C. Rice, R. D. Leonard.

Dept. 400—J. L. Ottoman, E. C. Generas, R. R. Sodomka, D. R. MacGregor, H. Nisbet, E. L. Johnson, H. J. Sumner, E. G. Gray, I. G. Rooder, I. K. Raney, N. C. Powell Jr., R. G. Newman, T. G. Graves, M. A. Murphy (two awards), M. S. Payne, C. R. Clark, M. O. Ramsey, J. T. Treat, J. E. Wagner, Pope, D. G. Tessereau, Givens.

Dept. 700—L. T. Zink, J. D. Jones, Landy (three awards), D. R. Dayharsh, A. H. Leboffe, Al Landry (two awards).

Dept. 780—Mike Alianelli, W. A. Farrish.

Auto Safety Item Offered

Another automobile safety item —whiplash protectors—are now available to GD/Astro employees at significant savings through arrangement with the safety section of industrial relations (Dept. 130-8).

The protectors are padded arresting cushions which are mounted to auto seat frames behind the heads of passengers and/or driver.

Samples of protectors are available in the Bldg. 5 safety crib where either cash or payroll deduction orders may be placed. The protectors themselves are to be picked up by the employee from Whiplash Protector Co., 348 West "F" street, San Diego.

Depending upon the model selected, price per protector is $5.60, $7.65 or $9 — in each case a saving of at least $3. Except for the $5.60 model which comes in black only, protectors are available in a choice of colors.

They can be fitted to any car except Volvo and Mercedes-Benz. Instructions for installation — said to be simpler than installing seat belts—are provided with each protector.

Use of protectors provides a safeguard against whiplash which accounts for nearly 15 per cent of the 1½ million motorist injuries each year.

'Single People' Club Council Organized

GD/Astronautics' Emily Trapp (Dept. 142) has been named president and Tom Dalton (Dept. 130) treasurer of the newly-formed "Council of Clubs for Single People" in San Diego.

She was instrumental in organizing the council for the purpose of uniting 14 major non-profit clubs in area. She may be reached at ext. 2912 for information.

Astro Ski Club Has Full Agenda

Following this Saturday's (Nov. 21) Sno Ball at U.S. Grant Hotel (tickets available at $1.50 each from LaVonne Martinez, ext. 3071, or at the door), Astro Snow Ski Club members will next meet Nov. 23, 7:30 p.m. in ARA Clubhouse.

The session will feature a swap meet involving six San Diego ski clubs. Articles for sale or trade (a 10 cent fee will be charged for the privilege) should be brought to the Clubhouse auditorium by 6:30 p.m. Car chains and ski racks are in particular demand.

A business meeting Dec. 2, 7:30 p.m. in the executive dining room will feature local merchants showing ski equipment and clothing. Then on Dec. 5 and 6, a trip to Big Bear is planned with reservations (lodging and meals at $12 per person) being accepted by Loyal Huddleston, 273-6857.

'GATOR TAILS,' ETC. ON TEEN CLUB MENU

"The Spats," known for their hit "Gator Tails and Monkey Ribs," will be featured at ARA Teen Club's dance this Saturday (Nov. 21), 7:30 to 11:30 p.m. in ARA Clubhouse.

The group, which Commissioner John Hess said will provide "four hours of rock and roll plus plenty of sweet music," will also introduce a yet-to-be-released number they have recently recorded.

Admission is 50 cents for Teen Club members; 75 cents for guests.

Hess said this dance would provide the final opportunity to purchase advance tickets for the special Dec. 5 session featuring the "Blendells." The December dance will be held in Astro cafeteria, and tickets cost $1.

Knutson, Schneider Top Pistol Shooters

J. S. Knutson and Roland Schneider finished neck-and-neck with scores of 290 and 9x and 8x respectively in master class of a .22 Police Course match held late last month by ARA Pistol Club.

Commissioner Bill Geopfarth ranked third in class with 289.

In expert bracket, Carl Jensen topped Bill Dittmann, 285-276; it was Lyle Ewing over Byron Clapper, 269-258 for sharpshooters; and Marksman Earnest Kampmann fired 199.

Schneider won a .22 Short National round with 289, Warren Ranscht and Geopfarth fired 288s, and Jensen scored 284.

Nicholas Qualifies For Diver Honors

The year's skindiving awards were decided last month, with Astro Divers' final competition event of 1964 on Oct. 8.

Bob Nicholas has earned the Diver of the Year award with a total of 87 points, followed by Jorge Zorrilla with 73 and John Phair with 53. Winners of the annual team competition were Zorrilla (captain), Phair, Howard Gutzmer, George Jonilonis and David Kellogg.

In the October event, Rod Johnson finished first with 16 lbs. of fish, while Bill Howard was second with 13 lbs., and Nicholas third with 5 lbs.

SPACE VEHICLE PAPER DELIVERED

A paper, "Vehicle Integrated Power System for a Manned Orbiting Space Vehicle" by R. W. Hagen and J. F. Hinton, GD/Astronautics Dept. 528-1, was presented at the SAE/Aeronautics and Space Engineering meeting in Los Angeles, Oct. 5-9.

When telephoning, never mind the weather. Get to the point. Telephone time costs money.

Tickets Are Offered For Charger Games

Reserved seat tickets for all remaining San Diego Charger football games (in league play) at Balboa Stadium are available through GD/Astronautics' employees services office, Bldg. 8, Plant 71.

(Employees at Plant 19 may make arrangements for tickets through the employee services outlet there.)

The Chargers meet the Buffalo Bills on Thanksgiving Day (Nov. 26), then play New York on Dec. 6 and Kansas City on Dec. 13.

Available tickets are in the "coach's circle" and sell for $3.50 each. A limited number of $2.50 seats also are available.

Circle R Golfers Earn Turkeys

Fourteen turkeys were "up for grabs" in ARA Golf Club's tournament at Circle R on Oct. 31-Nov. 1, with Harry Richardson and Kay Stites presumably taking home the plumpest birds for gross scores of 74.

Bill Nicklaus led net scorers with 61, while other turkey winners included F. Dietz (62); George Tubb and Frank Hockenburger (64s); R. E. Torrence, Forest Erwin, Chuck Cearley, John Jackman and Carl Meinson (64s); and J. McCafferty (65).

With only two turkeys remaining, tournament directors were confronted with net scores of 66 from Linn Richardson, B. Bludworth, John Doggett, Ed McCleave, C. W. Derrick, Ray Cleary, C. C. Pope and H. H. Moran.

Names were tossed into a hat for drawings, and Bludworth and Richardson won the birds. The balance of 66ers settled for three golf balls each.

Door Prize Bonanza Slated by Explorers

Door prizes galore will be awarded by ARA Explorers Club at its meeting tonight (Nov. 18), 7:30 in ARA Clubhouse, with two turkeys going to paid-up members and special awards reserved for family members and guests.

Featured speaker will be James R. Moriarty of Scripps Institution of Oceanography, discussing the Diegueno Indians. Moriarty will also identify relics and artifacts brought to the meeting by members.

This weekend (Nov. 21, 22) Explorers have planned a "mystery" trip of the Jacumba/Anza Borrego area, with details to be announced at tonight's meeting.

Fred Schulz Wins Transmitter Hunt

Fred J. Schulz (K6VUA) was winner of ARA Amateur Radio Club's "mystery transmitter hunt" Nov. 4, with Fred W. Franz (WA6VHB) as runner-up.

Schulz received a turkey, and Franz was awarded a copy of the Domestic Amateur Call Book.

Bill Roden (WB6JWQ) concealed a transmitter in a Clairemont-area garage as the "prize" sought by participants using mobile receivers and directional antennae.

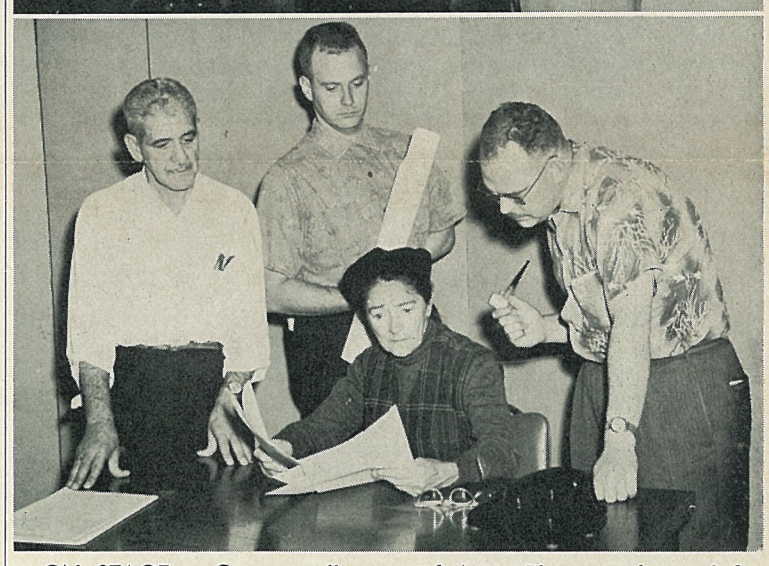
Leatherneck Bowl Tickets Available

Reserved seat ($2.50) and general admission ($1.50) tickets to the Seventh Annual Leatherneck Bowl game Sunday (Nov. 22) are available through Astro employee services, Bldg. 8, Plant 71.

This annual football clash pits the Devildogs of San Diego's Marine Corps Recruit Depot against Pensacola Naval Air Station Goshawks.

Net profits of the game will go to the San Diego United Community Services Fund and Navy Relief at each of the two participating service installations.

Sports & Recreation



ON STAGE — Camera glimpses of Astro Players rehearsal for "Solid Gold Cadillac" emphasize mobile features of popular comedienne, Lillie Mae Barr. At top, she works with Bill Evans, left, and Arne Hokans; in center, discusses interpretation with Director John Cone; and in lower photo, tries another sequence with Al Varon, left, Evans, and Kay O'Brien. "Cadillac" opens tonight (Nov. 18) at 8:30 in ARA Clubhouse.

Bridge Club Plans Special Fall Party

ARA Bridge Club will hold a special fall party starting at 7:30 p.m., Nov. 20 in ARA Clubhouse, with Master Points to be awarded and three turkeys to be raffled for those attending.

The event is open to all GD/Astro employees and members of their immediate families, as are all Bridge Club's regular Friday evening play sessions.

Winners at the Nov. 6 Master Point night were Neal Hampton and Tony Miller, north-south, and Phyllis and Vance Walsh, east-west.

Sign-Ups For Plant Basketball Due Now

Registrations for the up-coming plant basketball season are now being accepted, with deadline for sign-ups set Dec. 11. ARA Headquarters, ext. 1111, will accept entries and provide additional information.

Last year a total of 12 teams competed in three leagues playing Mondays, Wednesdays and Saturdays at Balboa Park's Muni Gym. Plant champs were "Has Beens" of Dept. 672.

ARA Calendar

(GD/Astronautics Recreation Association has some 40 activities in operation for employees. For information call ARA Headquarters, ext. 1111. Events listed begin at 7:30 p.m. in ARA Clubhouse, unless otherwise noted.)

★ ★ ★

ARCHERY—Shoot at 1 p.m., Nov. 22, ARA Archery Range.

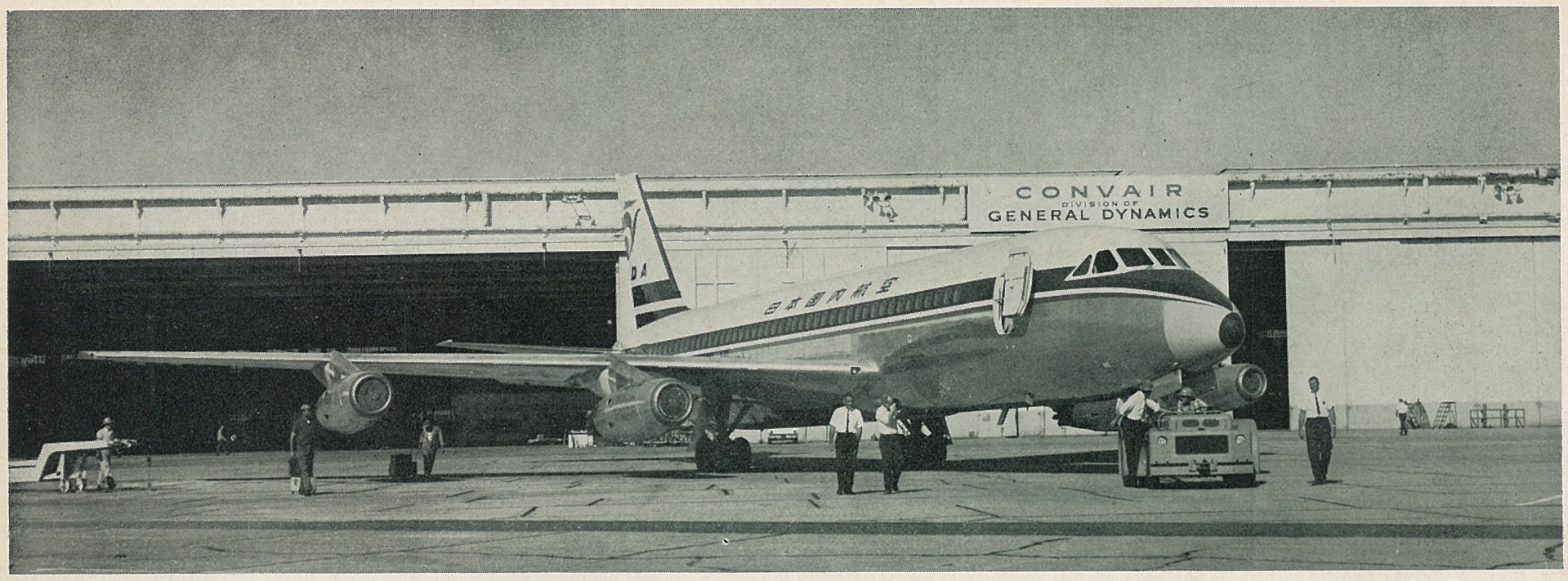
ASTRO PLAYERS — "Solid Gold Cadillac" with Lillie Mae Barr opens tonight (Nov. 18) with 8:30 curtain time. Other shows on Nov. 19, 20, 25-28, Dec. 2, 4, 5, 9, 11, 12. Reserved seats, $1.50; general, $1.

EXPLORERS—James R. Moriarty will speak on Diegueno Indians at meeting tonight (Nov. 18).

GOLF—Tournament Dec. 5, 6, will be played at Bonita, rather than Rancho Bernardo as originally scheduled.

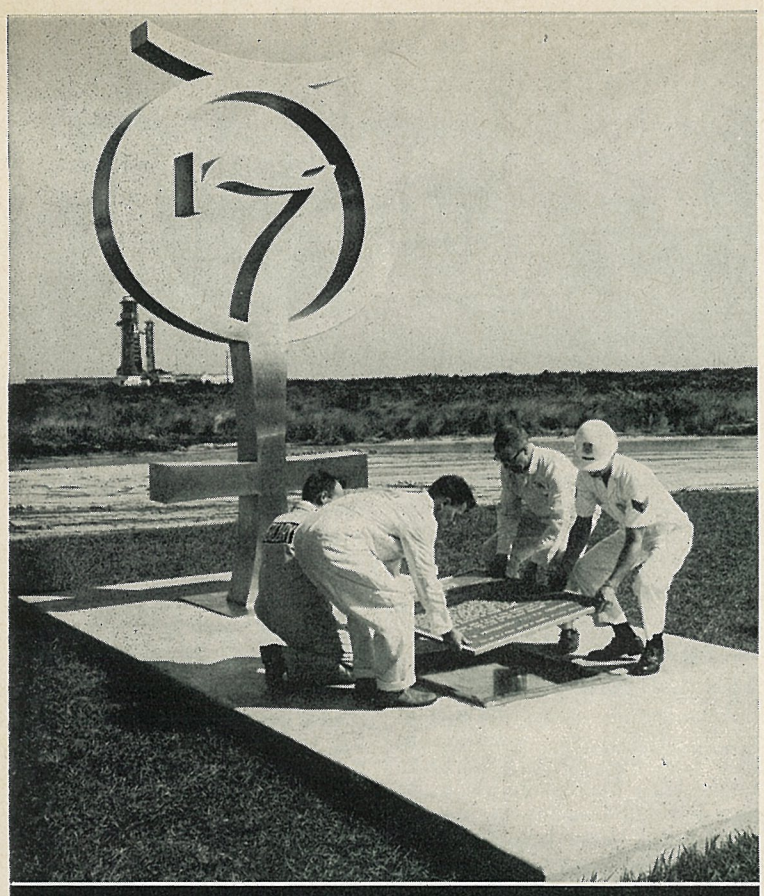
JR. RIFLEERS—Turkey shoot, Nov. 21, 8 a.m., CRA Range.

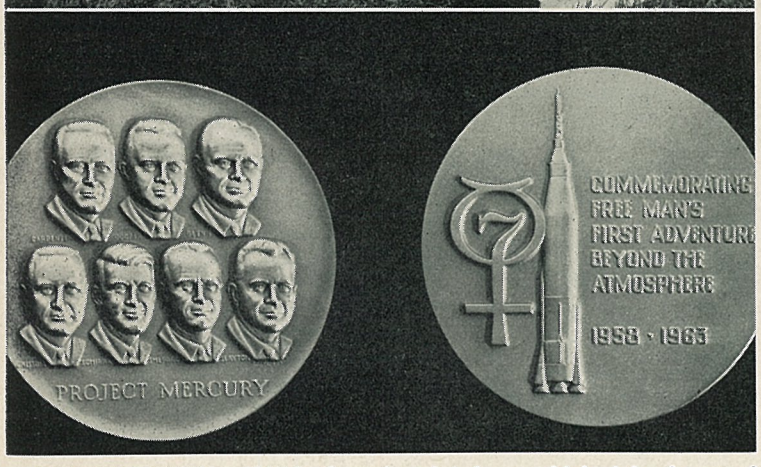
SPORTS CARS—Unique Photorama Rally VI, Nov. 29. First car out at 10 a.m. from ARA Clubhouse parking lot. Advance entries, $2.50; at post, $3. Information, Jack Gallant, ext. 2932.



JDA ROLL-OUT — Convair 880-M bearing colorful stripings of Japan Domestic Airlines, subsidiary of Japan Air Lines, rolls out of final assembly at San Diego early this month to be readied in field operations for delivery after first of year. Trans World Airlines took delivery on Convair's first 880 the end of October.

DART-CONVAIR—Retouched photo shows new Rolls-Royce Dart R. Da. 10 propjet engine on 240-D Convair - Liner. General Dynamics' Convair division and Rolls-Royce Limited jointly have announced go-ahead on modernization program to install Dart propjet engines on 240 aircraft. Total of 35 orders have been placed — 25 by Trans-Texas Airways, Inc., and 10 by Central Airlines, Inc. A 240 Convair - Liner is now in works at San Diego as prototype.





FOR POSTERITY — With Complex 14 from which Atlas-boosted Project Mercury flights originated in background, C. J. Heckelmoser (NASA), left, H. H. Packer and T. L. Bartlett, both GD/Astro, and S/Sgt. C. R. Rohrs (USAF) lower "time capsule" into base of Mercury monument dedicated Nov. 10 at Cape Kennedy. S. B. Hodge, GD/Astro manager of art direction, designed 13-foot high stainless steel monument. Lower photo shows details of medallion with bas relief faces of seven original astronauts. It is mounted on monument base. General Dynamics donated monument to U.S. government.

Proj. Mercury Monument at Cape Unveiled

(Continued from Page 1)

In view of the assembled dignitaries, Dr. Welsh unveiled the monument which uses Cape Kennedy's Complex 14—point of origin for the Mercury flights—as a backdrop.

Also speaking during the ceremonies was Arnold Frutkin, assistant administrator for international programs, NASA Headquarters, representing James Webb, head of the space agency.

Frutkin termed the Mercury monument a visible reiteration of a basic NASA philosophy, "that America could achieve pre-eminence in space through the combined efforts of an industry, government, university team."

He referred to Project Mercury's "six manned flights—in a 25-flight program — flights accomplished with complete pilot safety and without change to the basic concepts of the project," and stated, "General Dynamics has the praise and thanks of the American people for its large contribution in providing the Atlas booster that sent Glenn, Carpenter, Schirra, and Cooper on successful orbital missions."

Dedication of the monument was conducted cooperatively by NASA, the Air Force and General Dynamics. Within the base of the symbol is sealed a stainless steel "time capsule" with significant records of the Mercury achievement, intended for opening in year 2464.

The motto on the monument's plaque sums up the memorial's intent as it stands in tribute to the thousands of people—many of them General Dynamics employees—who contributed to the Mercury program. "Si monumentum requiris circumspice," it reads in Latin: "If you seek a monument, look about you."

People Mobility

Former E-B Engineer Named To Marine Systems Office

HARRISON T. LOESER, formerly supervisory engineer in Electric Boat division research and development, has been transferred to Corporate Headquarters, reporting to Edward H. Heinemann, vice president engineering and program development. He will be responsible for marine systems in the Heinemann organization which also includes electronic systems (Jack L. Bowers); missile and space systems (Gene L. Armstrong); industrial products (Don E. Kidder).

At the time of organizing the various specialty offices, attention was called particularly to the Industrial Products Office, aimed at properly recognizing and exploiting product "fallout" from systems-oriented divisions with a view to industrial development and sale.

Loeser joined E-B in 1953 after approximately seven years with Bethlehem Steel Shipbuilding at Quincy, Mass., where he designed many types of surface ships. A 1943 graduate of Webb Institute of Naval Architecture and with a master's degree from M.I.T., Loeser saw WWII Navy duty as a ship superintendent at Pearl Harbor.

* * *

JOHN M. KUDA has joined the controller's staff at Corporate Headquarters, reporting to James Sowers, director of cost analysis, as a cost analyst. A University of Connecticut graduate (1950) with an M.B.A. in marketing from Wayne State U., Kuda was with Ford Motor Co. for six years, subsequently with Curtiss-Wright and most recently, controller for C. J. Bates and Son, Inc.

* * *

DAVE ROBERTSON, formerly staff assistant to Corporate Assistant Controller Robison Clark, has been promoted to executive assistant, reporting to Corporate Secretary John P. Maguire.

A George Washington University graduate (BA, accounting), Robertson is a C.P.A. and has been a fiscal accountant and budget analyst for the U.S. Government. He joined General Dynamics in 1959.

Interdivisional Transfers

(Following are recent personnel transfers among General Dynamics divisions. In parentheses are dates when individuals joined the company.)

PAUL D. ADAMS (1954) Astronautics to Electronics-San Diego engineering; **WOLFGANG H. STEURER** (1958) Convair to aerospace technology, Fort Worth; **EDWIN ZABEL** (1955) from Astro (Schilling) to Electronics-Rochester purchasing; **HUBERT E. ZEHRING** (1959) from Astro to budgets, Convair; **HERBERT J. PEACE** (1961) from Astro (Altus) to Electronics-Rochester photographic lab and operations.

GEORGE E. HENRY (1961) from Astro (Lincoln) to Electronics-Rochester purchasing; **JESUS D. GONZALES** (1950) from Astro to Convair estimating; **CONSTAS P. LECOURIS** (1959) from Astro (Schilling) to Electronics-Rochester project engineering; **ROBERT J. HUGHBANK** (1959) from Astro to industrial security, Fort Worth.

PHILIP M. PROPHETT (1942) from Astro to director of advanced product development, Convair; **GORDON C. PRESTON** (1960) from Astro to program analyst, Electronics-San Diego; **EVERETT J. BREKKE** (1958) from Astro to General Atomic; **DALE M. BROWNELL** (1952) from Astro (Altus) to systems and procedures, Electronics-Rochester.

GEORGE R. BROLASKI (1954) from Astro to Electronics-Rochester production engineering; **WOODROW L. BARNUM** (1960) from Astro to Convair estimating; **CLYDE K. RUTLEDGE** (1955) from Astro to Electronics-San Diego project engineering; **WILLIAM SCHELL JR.,** Electronics-Rochester to Stromberg-Carlson; **GERALD J. BLUMENTHAL** (1958) from Astro to Convair engineering; **OLIN TEVENDALE** from Electronics-Rochester to Stromberg-Carlson; **DONALD K. KERR** (1956) from Astro to Electronics-Rochester cost accounting; **SAMUEL L. SHIPSTEAD** (1952) from Astro to Electronics-Rochester operations; **ELTON H. SOUTHARD** (1954) from Astro (Lincoln) to military products manufacturing, Electronics-Rochester; **JOHN F. CRAWFORD** (1950) from Astro to Convair estimating.

GD

ASTRONAUTICS EDITION

GENERAL DYNAMICS NEWS

Vol. 17, No. 25 PUBLISHED BY GENERAL DYNAMICS CORPORATION Wednesday, December 2, 1964

HEAD TABLE—Roger Lewis is shown addressing GD/Astronautics Management Club throng. Head table, from left: P. M. Coyne, club's "Booster of Month," J. C. Duffy, club vice president, J. F. Baebler, club financial secretary, R. C. Sebold, GD/Astro vice president—research, development & engineering, Lewis, D. K. Slingsby, club president, J. R. Dempsey, GD/Astro president, I. M. Laddon, General Dynamics director, J. F. Allen, NMA secretary-treasurer, G. J. Gonlag, club treasurer.

Craftsmanship Awards Reach Coast to Coast

First awards in the Craftsmanship phase of GD/Astronautics' "Do Good Work" program to be made on a "coast to coast" basis were presented last month to October winners in San Diego, at Vandenberg AFB, and at Cape Kennedy.

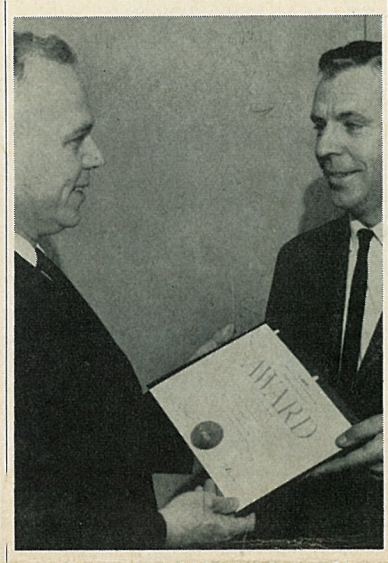
The occasion marked entrance of the Florida operation into the program, with personnel at Complex 13 cited as "Craftsmen of the Month" for a Quality Index of 114.3, high for the month.

Four ETR units now participate in Craftsmanship competition, with Complex 36-A ranked second for October; Complex 12, third; and Complex 14, a close fourth.

At Western Test Range (VAFB), material control (Dept. 576-3-5) finished in the winner's circle after only four months in the competition. Winning Quality

(Continued on Page 2)

OCTOBER CRAFTSMEN—In ceremonies in San Diego and at Vandenberg AFB, GD/Astro departments leading division-wide Crafsmanship race were honored recently. In top photo, President J. R. Dempsey presents San Diego award to Lee Ely for Dept. 283 (AWS final assembly and acceptance). Below is Vandenberg AFB scene showing Don Fagan, operations director, left; E. A. Millar of winning Dept. 576-3-5 (material control); Col. Q. A. Riepe, deputy from 6595th Aerospace Test Wing; Travis L. Maloy who presented award to Millar; Col. R. C. Thompson, deputy commander, 6595th ATW; Col. George Howard, chief of staff, First Strategic Aerospace Division.



POCKET MONEY—R. L. Yauney, right, receives Astro Employee Suggestion certificate and $1,094 check from P. I. Harr, director of reliability. Yauney suggested "branding iron" technique for affixing inspection stamps to electrical harness units to avoid research necessary when old-style ink marks rubbed off.

Branding Idea Earns $1,094

Space-age adaption of an old cattleman's standby—branding—has earned for R. L. Yauney, GD/Astro missile checkout inspector, an outstanding Employee Suggestion award.

Yauney earned $1,094 for saving Astro $10,940 (3,408 manhours) with his suggestion.

His idea involved Teflon identification tags affixed to electrical harness units.

Inspectors used rubber stamps and ink pads in stamping these units following routine inspection. Often, through repeated handling, the ink rubbed off, necessitating lengthy studies to identify the original inspector.

Yauney suggested altering the inspection stamp to fit atop a small soldering iron. The iron was heated and the stamp applied to the tag through a piece of printing ribbon. The result was a permanent engraved identification that would not rub off.

Photo Section Now First Shift Only

Effective Monday (Dec. 7), still photography section of communication (Dept. 125-0) will operate only during first shift.

Manager E. H. Boldrick has urged all departments to schedule photographic requirements with care, so that overtime can be avoided in providing the necessary services.

Lewis Outlines Key For Future

GD/Astronautics Management Club members last week heard General Dynamics President Roger Lewis describe the Corporation as "a company with a sound organization, a sound credit base, and sound programs. . ."

As featured speaker, Lewis' remarks included a candid analysis of the Corporation's status; a review of activities and potentials of various divisions; and a look toward future business.

He stressed that the Corporation's size will be used to advantage in emphasizing strength, and stated that the future will bring more projects to be tackled on a team basis, where the total capability of inter-divisional effort could best be utilized.

"Our company is unique in the breadth and depth of its technology and we intend to keep it that way."

Predicating his remarks on belief that the nation must continue to maintain a responsive defense posture, that private industry would be called upon to reply to these demands, and that General Dynamics would continue in the vanguard of those who supply the skills, Lewis stated:

"The role of our industry, generally, in national defense is to maintain competent teams under sound management. As for General Dynamics in particular, our strength lies in the breadth and depth of the competence we now hold.

"If we conduct ourselves competitively we are going to have business, but we must display the imagination to conceive and anticipate requirements; the inventiveness to create sound proposals; the selling skills to put these across; and the manufacturing resources with which to make good."

MOBILE TELEMETRY SYSTEM CREATED BY SURPLUS PARTS

GD/Astro employees at Sycamore Canyon Test Site call it a "taco cart"—because it looks like one, complete with conical chimney.

Actually it's a Mobile Ground Telemetry Transmission System, which despite its whimsical nickname has increased instrumentation capability at the Centaur S-4 test stand by about 440 telemetry data channels at a cost infinitesimal compared to that of an FM landline system for the same job.

J. R. Breeze, telemetry lead engineer, dreamed up the "taco cart" idea; R. G. Fleischman, telemetry engineer, turned out design and layout; and with approval of Test Conductor H. M. Brown Jr. and W. W. Deam, assistant test conductor (electrical), the device was proposed to management early this year.

The unit consists of four telemetry systems assembled into a

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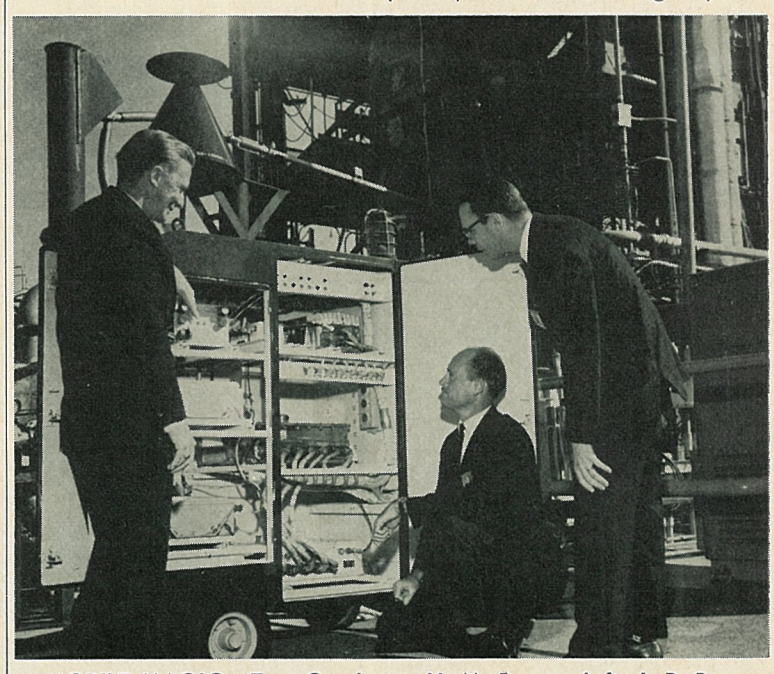
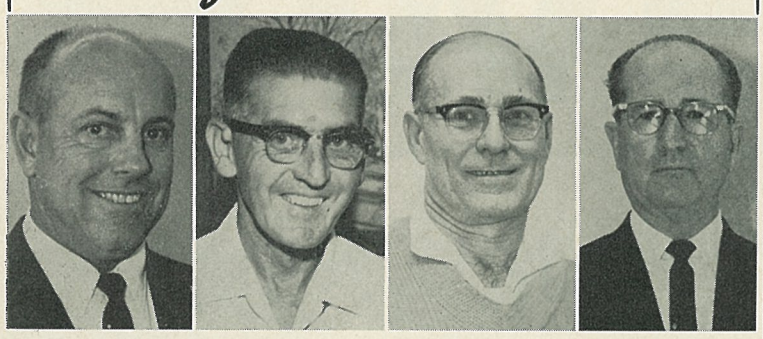


MOBILE MAGIC—Test Conductor H. M. Brown, left, J. R. Breeze and R. G. Fleischman admire Mobile Ground Telemetry Transmission System, dubbed "taco cart" by GD/Astro employees at Sycamore where unit was created at great savings through use of surplus and obsolete equipment.

Log Book Entries



New 25-year men at Astronautics are, from left: Stuart J. Williams, Dept. 151-0; Owen A. Mereon, Dept. 250-5; William B. Voosen, Dept. 383-2; F. R. Roberts, Dept. 143-4.

Conrad Seaderquist, Dept. 756-0, received his 30-year emblem at Astronautics recently.

Service Emblems

Service emblems due during the period Dec. 1 through Dec. 15.

Thirty-year: Dept. 758-0, H. J. Hawthorne, Raymond Kendall.

Twenty-five-year: Dept. 130-4, G. C. Spencer; Dept. 143-1, J. W. Dixon; Dept. 406-0, C. L. Pogorel; Dept. 420-5, J. P. Miller Jr.; Dept. 780-0, C. E. Birch.

Twenty-year: Dept. 462-0, R. G. Newman; Dept. 957-0, J. W. Smith.

Fifteen-year: Dept. 549-0, C. R. Cearley; Dept. 673-0, F. L. Bockover; Dept. 780-2, C. F. Brown; Dept. 832-1, F. L. Maxwell Jr.; Dept. 957-0, B. G. Kratz; Dept. 972-0, A. A. Kovschak.

Ten-year: Dept. 420-3, H. E. Meyer; Dept. 522-2, O. C. Harvey; Dept. 662-9, T. E. Jones; Dept. 731-0, Carl Senk; Dept. 812-0, Wendell Hesseltine; Dept. 958-7, Betty J. Kendall; Dept. 966-8, R. O. Joiner; Dept. 967-1, H. L. Newman.

EASTERN TEST RANGE

Twenty-year: Dept. 571-3, R. W. Lucas.

Papers Presented

ADAMS—W. S., Dept. 549-8. "Graphical Presentation of Electromagnetic Shielding Theory," Tri-Service Conference on Electromagnetic Compatibility, Chicago, Nov. 17-19.

BILL—E. S., Dept. 315-0. "Framework of Application of Operations Research Techniques in Field of Technical Publications," Operations Research Society of America, Honolulu, Sept. 14-18.

DUNN—C. J., Dept. 360. "Corrosion Balance between Launch Complex and Flight Vehicle in an Underground Silo," SAE National Aeronautic and Space Engineering meeting, Los Angeles, Oct. 5-9.

FERRISO—C. C., with C. B. LUDWIG, both Dept. 569-0. "Spectral Emissivity Measurements of the Rotational Band of H_2O between 500 and 2,200° K.," Optical Society of America, New York, Oct. 6-9.

FLORA—D. E., Dept. 513-2. "Space Guidance Control Technique for Radio Guided Ballistic Missiles," Conference on Aerospace and Navigational Electronics, Baltimore, Oct. 21-23.

GOODING—T. J., Dept. 596-0. "Coaxial Plasma Gun with Stationary Current Distribution," American Physical Society, New York, Nov. 4-7.

HABER—Edward, with Larry JAMBOR, both Dept. 549-8. "Analytical Preduction and Suppression of Inductively Caused Transients," Conference on Electromagnetic Compatibility, Chicago, Nov. 17-19.

HINTON—J. F., with R. W. HAGEN, both Dept. 528-1. "Vehicle Integrated Power System for Manned Orbiting Space Station," SAE Aeronautic and Space Engineering and Manufacturing Forum, Los Angeles, Oct. 5-9.

HOLLAND—K. D., Dept. 961-0. "Calculation of Upper Stage Payload to Satisfy Specified Probability of Mission Success," International Astronautical Congress, Warsaw, Poland, Sept. 7-12.

LEPEN—S. D., Dept. 521-0. "Cost Target Program for Short Term, Low Production Projects," VE Symposium, Army Missile Command, Redstone Arsenal, Nov. 18-19.

McREYNOLDS—A. W., with G. D. MAGNUSON, both Dept. 596-0. "Space Electron Radiation Shielding . . .," Symposium on Protection against Radiation in Space, Gatlinburg, Oct. 12-14.

NEWSOM—B. D., Dept. 262-0. "Physiological Considerations on Maintenance of Muscle Tone under Subgravity Conditions," Symposium on Ballistic Missile and Space Technology, San Diego, Aug. 12-14.

OSBORN—Palmer, Dept. 581-3. "Aerospace Planning Cycle Problems." Operations Research Society of America, Honolulu, Sept. 14-18.

POEHLS—V. J., Dept. 032-1. "AMR Global Tracking Network," IEEE Convention on Military Electronics, Washington, Sept. 14-16.

WOODINGTON—A. J., Dept. 140-0. "Role of the Industrial Standards Laboratory in Insuring Accuracy at the Point of Measurement," Instrument Society of America, Pittsburgh, Oct. 12-14.

Invention Disclosures

ASTRONAUTICS

DU BRUL — D. W., Dept. 986-2. Inflatable Insulation.

LEAK — O. T., Dept. 962-3. Bayonet Valve.

LELAND — J. M., A. M. COLVIN and G. S. McHENRY, all Dept. 662-7. Valve, Air Conditioning Check and Flight Ventin.

MAKI — S. C., Dept. 558-3. Optimum Guidance with Variable Thrust Vernier Engines.

MILDICE — J. W., Dept. 967-3. Integrated Radiation Source Aspect Indicator.

RODEN — W. A., Dept. 290-4. Magnetic Current Conductor.

ZOVANYI — M., Dept. 490-4. Controlled Atmosphere Welding Chamber (CAWC).

Births

COX — Daughter, Tara Kathelene, 6 lbs., 4 oz., born Nov. 15 to Mr. and Mrs. Joseph D. Cox, Dept. 504-1.

HAUSKINS — Daughter, Tamara Dee, age 5 mos. Adopted Oct. 28 by Mr. and Mrs. Dave Hauskins, Dept. 976-2.

Retirements

COOPER — James E., Dept. 150-0. Seniority date, Sept. 15, 1947. Retired Sept. 30.

MARK — Harold, Dept. 563-1. Seniority date, Sept. 26, 1956. Retired Dec. 1.

Deaths

CLEARY — Ray F., Dept. 146-3. Died Nov. 12. Survived by wife, Esther; son, Carl.

POTTHOFF — Rita H., Dept. 780-4. Died Nov. 17. Survived by husband, Ray C.; son, Rondal.

RATLIFF — Clifford P., Dept. 143-5. Died Nov. 13. Survived by wife, Margaret; son, Charles.

Craftsman Awards Reach Coast to Coast

(Continued from Page 1)

Index was 115.9, with PALC-I in second place with 106.1, and 4300-A, third with 103.9.

Travis L. Maloy, GD/Astro manager of test and launch operations-SLV, was on hand to present the award plaque to E. A. Millar, VAFB manager of operations support. Millar accepted on behalf of Cary Wirt, chief of material services, Supervisors George Dahle, Henry Massey and Robert Dougherty, and all material operations employees.

A repeat-winner graced the San Diego scene, as the October award went to Dept. 382, AWS final assembly and acceptance, with Lee Ely, chief, accepting the plaque from President J. R. Dempsey. The department had previously won April honors.

Centaur final assembly and checkout (Dept. 972) ranked second in the San Diego contest, with sheet metal (Dept. 732), third, and telemetry operations of electronic manufacturing (Dept. 780-4), fourth.

Plans to Help Needy Shape Up

Interest is increasing at GD/Astronautics in plans to assist the less fortunate during the approaching Christmas season.

Many departments and groups already have started their annual projects. Among them is the tradition of "adopting" a needy family.

Employee services section is again helping coordinate the overall plant effort, to curtail duplication. At present the list of needy families exceeds groups volunteering to adopt.

Employees may call ext. 2328 at Plant 71 for the names of needy families or to call attention to families which may require assistance.

Particular emphasis is being placed on known families associated with Astronautics.

Individual contributions toward a Merry Christmas for the less fortunate may be made by dropping money in "candle" receptacles soon to be placed at all plant gates or by tossing coins in the Bldg. 2 reflection pool.

AF OFFICERS JOIN IN VALUE SEMINAR

Two Air Force officers assigned to GD/Astronautics for Air Force Institute of Technology's "Education with Industry" program were among participants in the division's Value Engineering seminar concluded last month.

Capts. Ronald L. Bulmer and Dominic F. Chilbert joined E. W. Eaton of Air Force Plant Representative's Office, and 37 employees from various departments in the 40-hour workshop, ninth of its kind conducted at GD/Astro during 1964.

A tenth seminar is scheduled this month.

Participants received formal value engineering instruction; then put their training to practical use on actual hardware projects selected both for instructional value and for potential savings which could accrue from the VE effort.

Teams and their projects were:

Team #1—Aft umbilical panel assembly (submitted by George Webber). Capt. R. L. Bulmer, AFEWI; F. O. Clark, Dept. 148-3; H. L. Cross, Dept. 756-0; P. C. Price, Dept. 961-8; J. G. Wing, Dept. 452-0. Project leader: G. W. Bancroft, Dept. 521-0.

Team #2 — Heating duct structural adapter (submitted by Webber). Capt. D. F. Chilbert, AFEWI; H. I. Hart, Dept. 170-2; T. R. King, Dept. 700-0; M. S. Payne, Dept. 451-0; T. Shamshoian, Dept. 661-8. Project leader: Bancroft.

Team #3 — GLOTRAC transponder checkout set R/F chassis (submitted by Saul Lepen). C. E. Crawford, Dept. 377-4; R. R. Sodomka, Dept. 422-1; L. L. Stoman, Dept. 336-1; T. P. Young, Dept. 694-0; D. G. Tessereau, Dept. 410-0. Project leader: F. R. Blake, Dept. 831-1.

Team #4—Separation switch pedestal (submitted by Webber). G. H. Bosco, Dept. 568-1; N. K. Burke Jr., Dept. 665-1; E. J. Kaminski, Dept. 557-1; F. B. Spieker, Dept. 834-1; E. W. Eaton, AFPRO. Project leader: Blake.

Team #5—Engineering and tooling design vellum (submitted by Webber). Dave Gorham, Dept. 490-3; W. Groesbeck, Dept. 558-3; R. E. Maze, Dept. 525-6; L. W. Richards, Dept. 663-4; J. C. Ruzich, Dept. 833-2. Project leader: C. H. Kelly, Dept. 665-1.

Team #6—Pre-tension assembly, Surveyor separation system (submitted by Webber). D. M. Carlton, Dept. 403-3; W. Heinold, Dept. 382-1; J. W. Helgeson, Dept. 654-1; F. Puhek, Dept. 556-5; C. F. Gonzalez, Dept. 585-1. Project leader: Kelly.

Team #7—Fuel and oxidizer lines vibration damper (submitted by Webber). R. J. Blommer, Dept. 780-0; W. R. Creider, Dept. 971-5; D. N. Mareen, Dept. 373-7; W. Mitton, Dept. 528-2; J. P. Moore, Dept. 525-6. Project leader: I. E. Wissner, Dept. 145-0.

Team #8—Gas generator end booster fuel start line assembly (submitted by Webber). C. G. Kickbush, Dept. 971-5; P. A. Nagy, Dept. 146-0; R. J. Wilson, Dept. 663-4; C. G. Woodward, Dept. 780-0; R. Shackelford, Dept. 547-4. Project leader: Wissner.

AWS AWARDS—F. E. Grossher, seated left, receives cost reduction certificate from Assistant Program Director C. J. Dunn, at climax of ceremony which saw awards presented to eight AWS employees who initiated projects saving over $25,000 each. Standing from left are C. Allen, H. H. Campbell who accepted certificate for Anthony Calman, D. P. Bender, A. H. Gross, Lee Ely, V. W. Way and W. Heinhold.

Certificates of Commendation Earned For Cost Cutting Effort

Eight employees of GD/Astronautics' Atlas Weapon System (AWS) project were formally presented certificates of commendation by Assistant Program Director C. J. Dunn recently, in recognition of achievements in the division's cost reduction program.

The eight, each of whose projects were implemented for savings in excess of $25,000, were among 64 AWS employees to whom certificates for completed projects were issued during November.

During the first three quarters of 1964, AWS personnel have been credited with savings equal to 180 per cent of the department's goal for the year.

Men cited recently by Dunn had initiated projects with savings totalling $761,151. The largest, saving $467,159, was initiated by F. E. Grossher, manager of AWS operations, and dealt with method improvement and installation resequencing which resulted in better manpower utilization.

Consolidation of functions by A. H. Gross, AWS technical publications manager, saved $86,374; while a similar project implemented within his section by Anthony Calman Jr. was credited with saving $49,034.

Lee Ely, chief of AWS final assembly, was cited for $42,305 savings; V. W. Way saved $31,522; W. Heinhold, AWS final assembly foreman, $31,064; D. P. Bender, $27,688; and Charles Allen, $26,005.

During the first three-quarters of 1964, cost reduction projects initiated within AWS have shown an audited, net savings of over $2 million.

Visual Aids Posted In Packaging Areas

Materials handling and packaging engineering (Dept. 405-1) has introduced a series of posters in packaging areas of GD/Astro operations to assist in proper application of handling and packaging standards.

Supervisor G. M. Coole said the posters are part of an intensified effort to trim production costs through improved methods.

First of the 30 by 40-inch visual aids, developed by W. N. Fisher, was placed in the Dept. 733 area of Bldg. 5, Plant 71.

Phone Switchboards On New Schedules

This week telephone switchboards serving GD/Astronautics installations in the San Diego area began operating on new schedules.

Plant 71 switchboards will be in operation from 6 a.m. to 9 p.m. Monday through Friday and from 7 a.m. to 3:30 p.m. on Saturdays. No service will be available on Sundays or holidays.

Plant 19 switchboards will operate from 7 a.m. to 5 p.m., Monday through Friday only.

Volunteers For Party Solicited

Adult volunteers willing to work about four hours are being sought by ARA in staging the annual Astro Christmas party for needy children.

The party will be from 4 to 7 p.m., Dec. 19 in the Astro cafeteria.

Volunteers may sign up by contacting Dixie Husted, ext. 2328, at Plant 71.

The annual affair, staged through the efforts of Employees' Con-Trib-Club, Salvation Army and ARA, will host 150 teen-age San Diego youngsters. They will be fed, entertained and presented with gifts and clothing.

Astro Wives Club members are handling acquisition of clothing, while ARA Employees' Council members and their wives will wrap gifts at a special Dec. 14 affair.

Mobile Telemetry System Created

(Continued from Page 1)

surplus communications cart. Systems themselves were surplus—removed from a previous test vehicle and placed in storage as obsolete for flight testing.

About two feet wide, 4½ feet long and six feet high, the cart includes measurement programming accommodations. The "chimney" is actually an antenna.

Mobility is the key advantage of the cart, since it can be moved to any test facility where installed instrumentation must be augmented.

Total cost of the unit came to about $18 per data channel, compared with approximately $2,500 per channel for landline data capability.

General Dynamics NEWS

Published by General Dynamics Corporation, One Rockefeller Plaza, New York, N. Y. 10020; with editorial headquarters at 3302 Pacific Highway, San Diego, Calif. 92112, P.O. Box 1950, telephone 296-6611, ext. 1071. Logan Jenkins, editor-in-chief.

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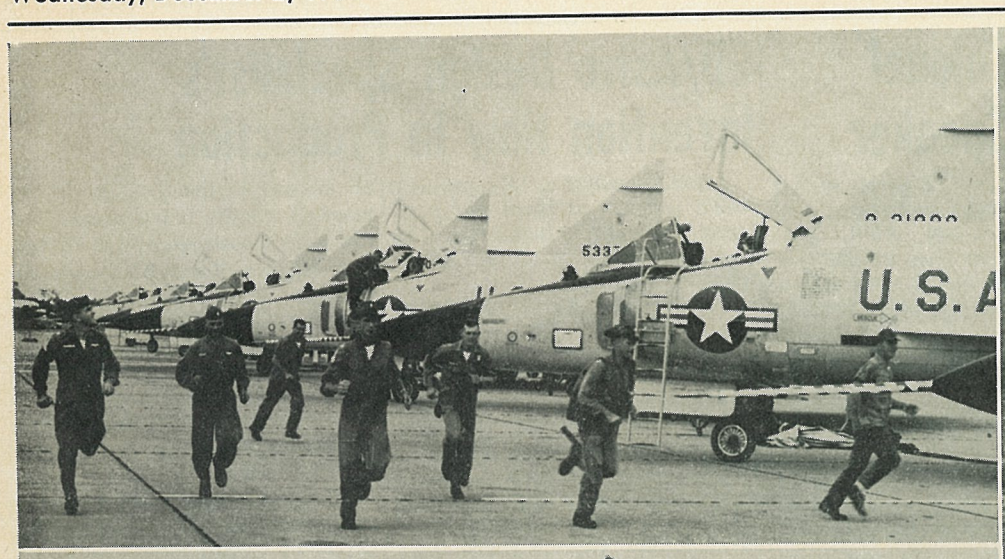
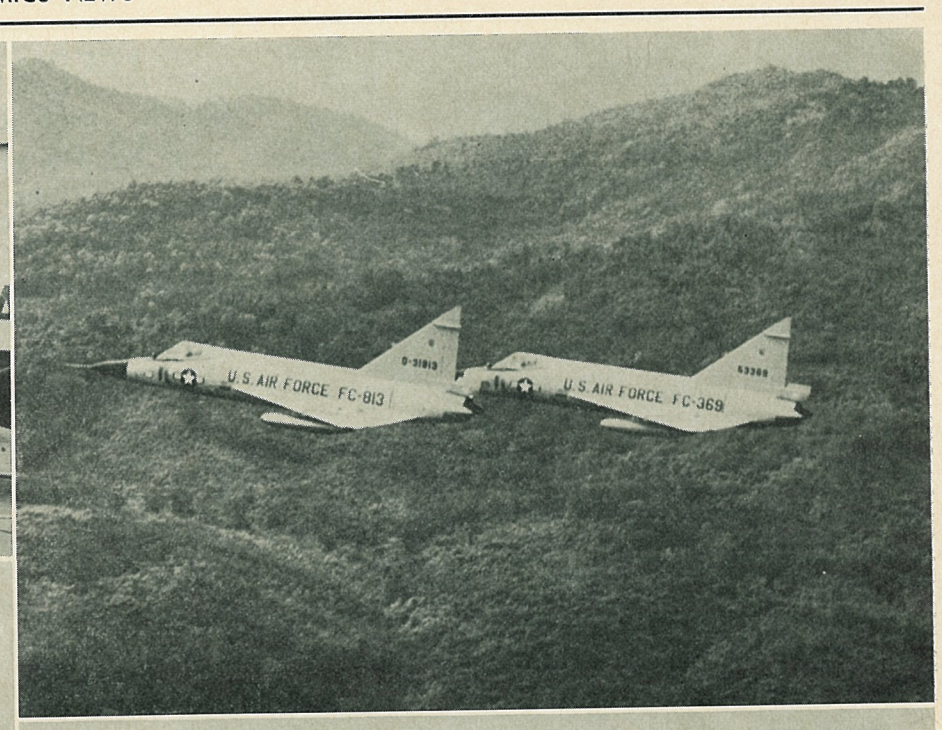
Affiliated editions of General Dynamics NEWS are published in Rochester, N. Y., covering GD/Electronics and Stromberg-Carlson, editorial offices, 100 Carlson Road, HUbbard 2-2200, ext. 2555. Fred E. Voss, editor; and at Groton, Conn., covering GD/Electric Boat, editorial offices at Groton, 446-3129. Ed Caffrey, editor.

NINTH CLASS—Members of November Value Engineering seminar at GD/Astro gathered for photo mid-way through course. Two-week workshop coupled classroom training with work on actual hardware projects; was ninth conducted by division during 1964.





IN THE FAR EAST — F-102s of the 16th Fighter-Interceptor Squadron, based at Okinawa, are pictured during sorties over Viet Nam. At top left pilots practice a "scramble" and at top right Convair-built planes soar over rugged terrain. At lower right, landing at Saigon, planes "come in high and land long." "You would, too, with Viet Cong so near," reports H. R. Smith, Convair's field service rep, based with 16th FIS at Naha Air Base, Okinawa, for well over two years. Squadron is attached to 51st Fighter Wing in Pacific area. At lower left are Lts. Taylor, Newcomb, Currier, Col. Taylor, Lt. Col. Page (16th CO), Capt. Legako, Lt. Tatum.

REALLY BIG SHOW—W. D. Halsey, left, and N. B. Robbins, inspect giant camera once used in RB-36. Camera, with artist's drawing showing its placement in forward fuselage, is headed for Air Force Museum.

6,000 Pounder

Giant Camera Carried in RB-36 Will End Career in Museum

A giant Air Force camera, which once "photographed a golf ball" from an RB-36 45,000 feet in the sky, is going into retirement.

The huge camera, weighing approximately 6,000 lbs., was shipped from GD/Fort Worth to the Air Force Museum at Wright-Patterson AFB, Dayton. It will be placed on permanent display.

Built for the Air Force in 1951 by Boston University—and often called the "Boston University Camera"—the mechanism was fitted into the forward fuselage section of an RB-36.

"This was the first job handled by GD/Fort Worth's development department," recalled W. D. Halsey. "We had to cut a large hole in the top of the plane, lower the camera, then patch the skin."

The irregular-shaped camera is about 12 feet tall, five feet across and perhaps 12 feet deep at one point. It uses 18-inch wide film.

"Advantage of the long focal length was to get clearer large-scale pictures," reflected N. B. Robbins.

The "golf ball" incident was highlighted when former Undersecretary of Air Force John McCone showed a picture taken of a golf course from nine miles high to a Senate Appropriations Subcommittee. He was attempting to dramatize the country's reconnaissance capability.

Golfers showed up clearly in the picture, and using a magnifying glass, the golf ball was plainly discernible.

This picture, along with an artist's drawing of the camera placed inside the RB-36, is being donated to the Air Museum by GD/Fort Worth.

Advancements in the state-of-the-art in both film and optics have now led to the development of smaller, higher resolution cameras, permitting the retirement of the Boston U. camera.

> To do one's duty sounds a rather cold and cheerless business, but somehow, in the end, it does give one real satisfaction.

E-B to Overhaul Peruvian Subs

Electric Boat division will overhaul two attack submarines, the Dos de Mayo and the Abato, for the Republic of Peru.

Both diesel-electric submarines were built at the Groton shipyard and delivered to the Peruvian Navy in 1954.

The Dos de Mayo was scheduled to arrive at Groton last month. It will be hauled on the shipyard's marine railway, where work on both vessels will be performed.

Tentative plans are for the Dos de Mayo to depart for Peru about March 1, with the Abato scheduled to arrive at about that time for a three-month overhaul period.

Similar in appearance to post-war U. S. Navy Guppy-type submarines, the Dos de Mayo and the Abato are 243 feet long and displace about 1,400 tons.

Two sister ships, the Angamos and Iqueque, were built by E-B.

People Mobility

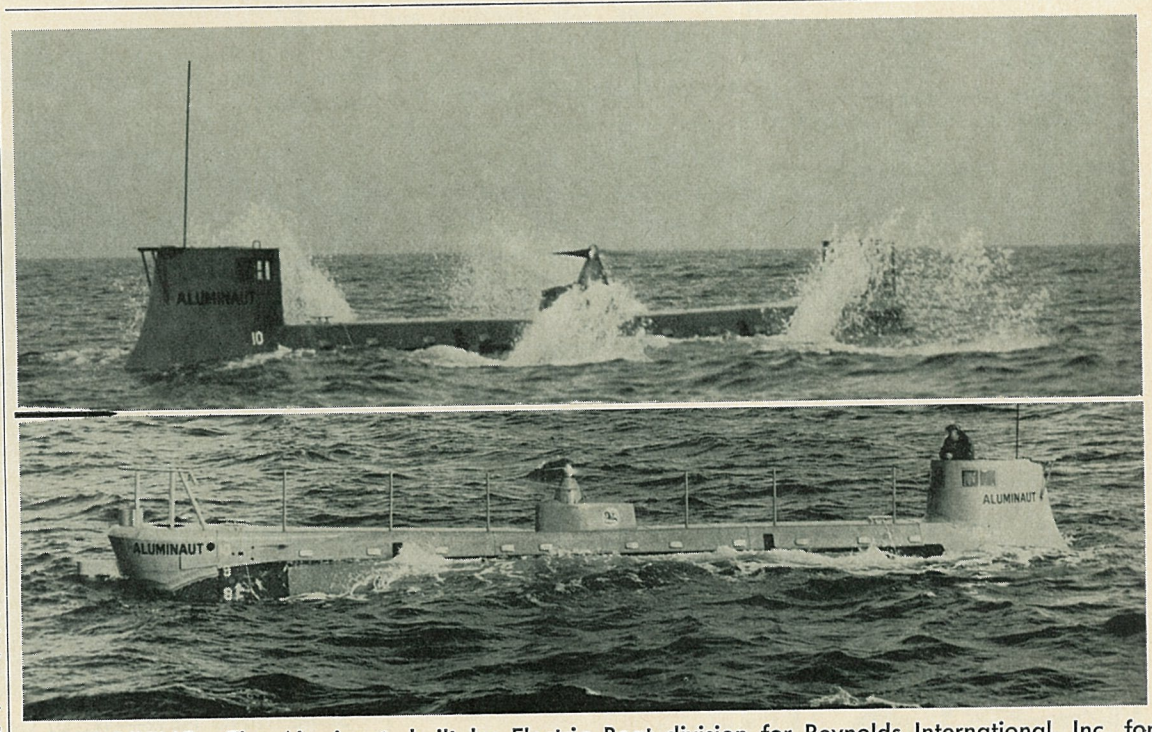
Interdivisional Transfers

(Following are recent personnel transfers among General Dynamics divisions. In parentheses are dates when individuals joined the company.)

ERWIN J. BOSCH (1952), **FRANK A. HESS** (1957), **GERALD W. ROBERTSON** (1964) from Astro to Convair engineering; **ERNEST J. ESTLICK** (1963) from Astro to Fort Worth chemical; **ARCHIBALD N. BOWDEN** (1955) from Astro to Electronics-San Diego estimating; **RAYMOND D. CHESLER** (1941) from Astro to Convair engineering.

DONN H. DE MARCE (1950), **CHRISTOPHER C. L. SPIKINS** (1956) from Astro to Convair engineering; **JAMES A. CHERRY** (1960) from Electronics-SD to Centaur estimating, Astro; **CLARENCE S. BARSUK** (1956), **ROBERT B. GOODRICH** (1953), **HOWARD PETERSON** (1963) from Astro to Convair engineering; **O. L. HARRIS** (1956) from Convair to EDP programmer, Stromberg-Carlson, San Diego; **GEORGE A. DETHIER** (1956) from Astro to Convair engineering.

JOHN C. McCAFFERTY (1955), **RUSSELL J. BJORSTROM** (1952) from Astro to Convair engineering; **ALAN E. GENSEMER** (1958) from Convair to Astro thermodynamics; **OSCAR B. QUINTANILLA** (1960) from Astro to Convair engineering; **GEORGE W. BARROW** (1954) from Astro to Electronics-SD purchasing; **GEORGE A. HAFFORD** (1954), **WALTER C. ROBINSON** (1947) from Astro to Convair engineering; **JOSEPH A. BAKER** (1957) from Astro to Electronics-SD quality control.



TEST DIVING—The Aluminaut, built by Electric Boat division for Reynolds International, Inc. for research and commercial projects, is continuing series of tests and dives after successfully completing builder's trials in Long Island Sound. Craft carries crew of three, is 54 feet long. In top picture she surfaces after dive. Recent rough weather has hampered test operations.

UP FOR GRABS—Lucky winners in CRA-ARA Gun Clubs' big game drawing won't get the girl or the gun, but they will have a chance at some of other hunting equipment ARA Commissioner Ezra Johnson is showing Donna Griffith of ARA staff. Top prize at Dec. 8 drawing will be 35mm camera.

35mm Camera To Be First Prize In Gun Club's Annual Drawing

A high-quality 35mm camera will go to some lucky big game hunter as first prize in CRA-ARA Gun Clubs' annual drawing.

This year's top prize is an Aires Penta 35 Reflex with a split-image range finder, fully automatic diaphragm, flash synchronized to all speeds, and 11 shutter speeds to 1/500—to mention a few of its features.

Eligibility for the camera, and many other valuable awards to be handed out at the Dec. 8 drawing, is simple for General Dynamics hunters who have bagged game during the season. All they have to do is fill out forms now at all GD employee services outlets, testifying to the type of game they shot.

Entries may be made right up to the time of drawing next Tuesday night, 7:30 p.m., in Gillespie Field Clubhouse.

Second prize will be a pair of 7x35 binoculars and third, a .22-cal. pistol. Other items include an Instamatic 100 Kodak, transistor radio, hunting gloves, stainless steel hunting hatchet, hunting knives, socks and other equipment. Number of prizes will depend entirely upon the number of entries.

Special feature on the evening's program will be a film showing of movies shot by Stromberg-Carlson's Ed Carey during hunting and fishing trips to Alaska. Carey, now S-C manager of international requirements, served as a pilot with the Air Force for many years and hunted and fished extensively in the north land.

Officials from the State Fish and Game Department have been invited to the Dec. 8 meeting, said CRA Commissioner Jack Swank and ARA Commissioner Ezra Johnson, who are making arrangements for the annual drawing.

GD MAN WRITING SPANISH COLUMN

"Hardison's Spanish," compiled by Convair's James Hardison, is a new weekly feature in the Sentinel, suburban newspaper serving Pacific Beach, Ocean Beach, La Jolla and Clairemont areas. The column is intended as a capsule course in Spanish, emphasizing the most commonly-used phrases. Readers are invited to dial a number to hear correct pronunciation on recordings.

XMAS TRAPSHOOT SET FOR DEC. 20

CRA Gun Club has set Dec. 20 as the date for its annual Christmas trapshoot at Gillespie Field Range. The shoot is open to all General Dynamics people. Hams and turkeys will be awarded to winners.

Safety Men Elect Rowland and Cooper

Three General Dynamics men are involved in recent elections of the San Diego Chapter, American Society of Safety Engineers.

Guain Bonner of General Atomic, retiring president, becomes the chapter's national representative. Sam Rowland of General Atomic is the new vice president, and James Cooper of Astronautics was elected treasurer.

Programs Combined In GD/Astro Move

Combination of the Space Launch Vehicle (SLV) and Atlas Weapon System (AWS) programs at GD/Astronautics was announced last month by President J. R. Dempsey.

The move, effective Nov. 16, consolidates both projects under C. S. Ames, vice president and program director-SLV, with C. J. Dunn as assistant program director-AWS reporting to Ames.

Income Tax Course Has First Session

Income tax course, sponsored by Convair educational services, is still open to all GD people, although first session was held last evening.

The six-session course in preparation of income tax returns in compliance with current regulations is held at Convair Plant 1, Bldg. 14, Room 8.

Remaining sessions will be Dec. 8 and 15, Jan. 5, 12, and 19. Hours are from 4:30 to 7 p.m. each night.

Registration will be accepted at next Tuesday night's class upon payment of the $2 enrollment fee.

Instructing is Gerald V. Baughman, tax expert formerly with Convair accounting department.

The course is given as a part of the Hoover High School Adult Education program.

AFSC Colonel To Be Speaker

Col. William F. Stevens of Air Force Systems Command Headquarters, Andrews AFB, Md., will be main speaker at the Dec. 14 meeting of San Diego Section, American Society for Quality Control.

Dinner meeting will be in the Bronze Room and Restaurant, La Mesa. Social hour will be at 6 p.m., dinner at 6:30, and meeting at 8.

Col. Stevens serves as Chief of the Systems Effectiveness Division Directorate of Systems Policy, DCS/Systems. He previously was director of armament training at Lowry AFB, Col., and was division observer during transition from B-50s to B-47s at MacDill AFB, Fla.

In addition to his primary military duties, he has been active in promoting a close military-industry relationship for improving the techniques and methods for overall weapons systems effectiveness.

P. I. Harr, GD/Astronautics director of reliability control, will moderate at the meeting.

Tickets, at $2.50, are available from: Convair—L. Stuckey, ext. 646, Plant 1; Astro Plant 71—Paul Gelles, ext. 4504; Astro Plant 19—R. F. Frederick, ext. 509; GD/E—J. A. Lederer, ext. 1476; S-C—Ivan Kemper, ext. 36, Plant 2.

ASTRO PILOTS LOG SAFE FLYING HOURS

Two General Dynamics pilots now with Astronautics, have received certificates attesting to well over the minimum 500,000 miles of safe flying required for National Business Aircraft Association's safety awards.

Glen M. Barker, now captain in charge of Astro's flight department, and Vince Gann Jr., have both piloted aircraft for business operations for nearly 800,000 miles "without accidents involving damage to property or injury to personnel."

Barker has 798,660 miles to his credit; Gann, 789,495.

Both were former Convair pilots, transferring to Astro flight department last year. They pilot Astro's Aerocommanders connecting San Diego with offsite bases.

Garden Club to Hold Christmas Party

Santa Claus will make a preview appearance tonight (Dec. 2) at the annual Garden Club Christmas party to hand out gifts to the youngsters and grown-ups attending.

Convair and Astro families will gather at 7 p.m. in the Floral Association Bldg., Balboa Park, for their usual holiday celebration. Time has been set up half an hour to get the children home for regular bedtimes.

Besides the gift exchange there will be refreshments and door prize drawing for valuable items and turkeys.

GD/Astro Design Specialist's Invention Now in Production

A simple solution to a problem which plagues military and commercially-oriented industries alike has been found by a GD/Astronautics employee.

Charles M. Richards, design specialist, Dept. 528-3, has been issued U.S. Patent No. 3,139,294 for a "Flared Tube Fitting and Seal"—specifically an improved sealing technique for the AN-type tube fitting used widely in missile and aircraft industries.

Although AN fittings find their best application in joining lines carrying low viscous fluids, they have been the subject of considerable research directed at correcting leakage around the fittings.

Imperfections of fitting or tube, variations in concentricity, less than completely smooth and polished mating surfaces—all contributed to the leakage problem, and it had been economically impossible to mate the conical surfaces of fitting and tube with total effectiveness.

In 1958 Richards came up with an answer to the problem by inventing a soft, crush washer for use with the standard AN fitting. His initial seal was of copper, although Richards recognized that any malleable, soft metal (tin-plated copper, aluminum, nickel, etc.), could be used. To speed assembly, he added flat surfaces on the skirt of his seal to grip the fitting while the tube was being connected.

"Invention in hand," Richards contacted GD/Astro's patent department (Dept. 103-1) and filed patent application covering the seal and the flared tube fitting. The device was subsequently licensed to Voi-Shan Manufacturing Co., of Culver City, Calif., which has successfully produced and marketed the seal.

Royalties to General Dynamics on Richards' invention this year will run to at least $25,000, of which he will receive an appropriate share under provisions of the General Dynamics Patent Plan.

SUPER SEAL — Charles M. Richards, left, displays sample of "Flared Tube Fitting and Seal" to Carl R. Brown, GD/Astro patent counsel. Richards holds patent. Seal, now produced and marketed under license to General Dynamics, improves effectiveness of AN-type fittings.

Soldering Holders at GD/Astro Raise Work Station Efficiency

Soldering operations in GD/Astronautics electronic manufacturing (Dept. 780) have been made easier and more efficient through recent installation of compact soldering equipment holders at work stations.

A look at previous work station layouts had disclosed a number of flaws in the soldering arrangement. Each employee used a soldering iron, cleaning sponge, iron holder, flux bottle and can of chlorothene cleaner — usually spread out randomly across the work area.

Studies indicated that employees had to "search and reach" for various of these items on an average of 110 times an hour. Minor burns resulted from reaching across the unprotected iron tips, or from knocking irons off their stands. Flux bottles were often upset, and time was lost while cleaning up the spillage.

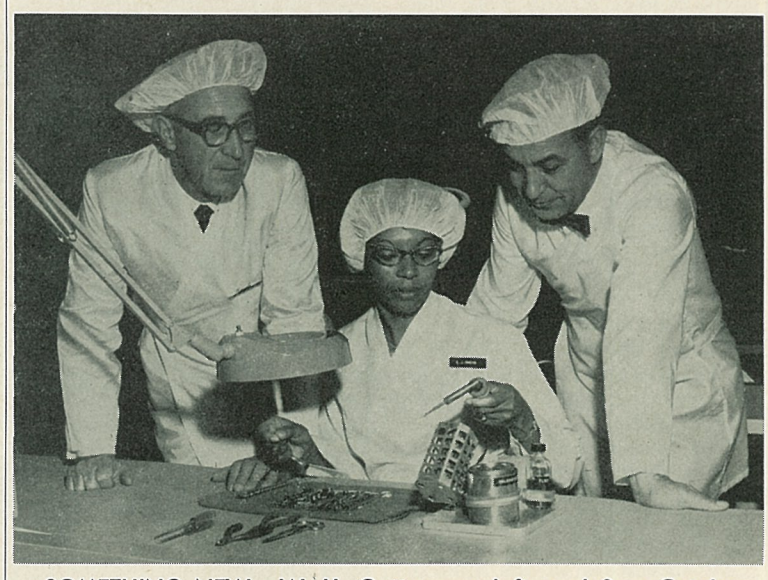
Seeking a solution to these problems, W. U. Gatterman, electronic manufacturing general foreman (Dept. 780-2), and Sam Catalano of operations planning and methods (Dept. 405-2) surveyed other electronics firms, then worked out a new unit adapted to GD/Astro requirements.

Fabricated in-plant, new holders consist of a solid aluminum base, 6½ by 7-inches, to which is bolted or clamped a cage-type iron holder, tip cleaner, a flux bottle and half-pint can of cleaning fluid.

The setup places all items together within easy reach, while the cage-type holder completely covers the soldering iron when it is not in use, and supports it so it cannot fail.

By reducing the "search and reach" phase, soldering efficiency is improved and iron burns are eliminated, as is spillage since flux and cleaning solution containers are clamped to the stand.

Sixty of the new stands were in use by early November, and expansion to all soldering areas at GD/Astro is planned.

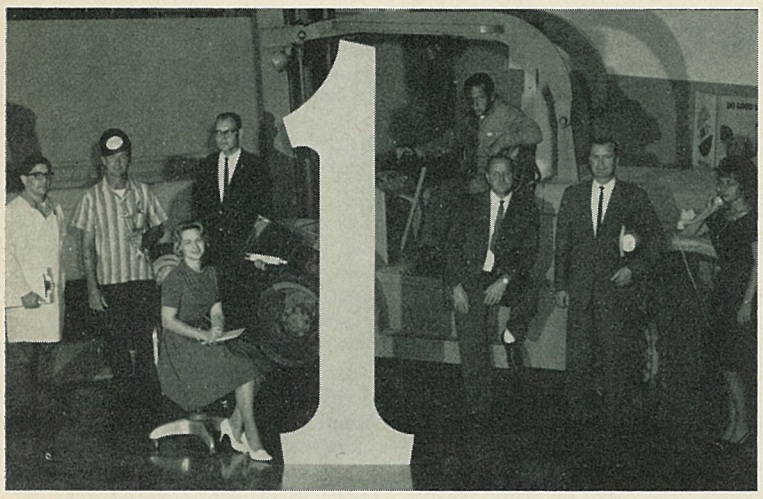


SOMETHING NEW—W. U. Gatterman, left, and Sam Catalano, right, watch with interest as Ethel Owens demonstrates use of new soldering equipment holder in GD/Astro electronic manufacturing. Holders, designed and built in-plant, are now in use at 60 Dept. 780 work stations.

December Salvage Schedule Released

Salvage yards at Convair and Astronautics will be closed over the holiday weekends at Christmas and New Year's.

December schedule is:
Convair—Dec. 5, 19.
Astro—Dec. 12.



BIG "ONE"—Full year of work by GD/Astro employees at Vandenberg AFB with no lost-time accidents is symbolized in photo with representatives of many occupations involved in record. From left are Jesus Apodaca, reproduction leadman; E. F. Ford, missile mechanic; Anne Tillis, steno-secretary; Ted Von Allworden, flight test engineer; B. R. Fetters, fork-lift operator; W. L. Johnson, assistant foreman; Val D. Wynn, site manager; Carolyn Vind, department clerk.

Parents Team With Juniors In Thanksgiving Gun Event

Fathers and mothers teamed as silent partners with young Astro Junior Rifleers in a luck event Nov. 21 at CRA Gun Range to help bring down the main entrees for Thanksgiving dinners.

Winners of the four turkeys supplied by CRA and ARA were: Steve Greer, first, 132; John Tramposh, second, 111; Steve Callow, third, 97; and Garrett Miller, fourth, 90.

Scores were the aggregate of five rounds shot by each Junior and five by his adult partner at the same target.

In an adult staff shoot following the Juniors' competition, Rocky Eaton, Bill Polakowski, and Martin Miller were one-two-three out of the 16 competing.

Fun trophies went to all winners.

Two more big events are on the Junior schedule during the next couple of weeks. Five two-man teams of Junior boys and girls will travel to Camp Pendleton Saturday to participate in the Southern California Junior Invitational Tournament.

(An Astro Junior Rifleer, Richard Ellis, placed third in a field of 48 in individual standings in the master class at a similar Southern California Junior Invitational event sponsored by Pasadena Rotary Club Oct. 25. He scored 384 out of a possible 400.)

The rest of the young Convair and Astro gunsmen making up the rifle group will gather at the CRA Range on the same day (Dec. 5) at 8 a.m. for their regular club shoot.

Another turkey shoot will precede the Dec. 19 Christmas party and gift exchange at Gillespie Field Clubhouse.

Krohn, Groesbeck Win Turkey Tourney

Alex Krohn, Dept. 826-0, and F. W. Groesbeck, Dept. 558-3, won birds in this year's edition of ARA Badminton Club's annual Turkey Tournament, played Nov. 21 in Balboa Park's Muni Gym.

Barbara (Mrs. Alex) Krohn, and Dennis Sealey, Convair Dept. 65-3, received shuttles and tickets to Astro Players' "Solid Gold Cadillac" as winners of the mixed doubles round.

The club meets for play each Monday, 7 to 10 p.m. in the Federal Bldg., Balboa Park, with all General Dynamics folk welcome to take part.

Allen Van Norman, Dept. 376-4, was recently named ARA commissioner for the group, succeeding Les Marr who has guided the activity in previous years. Van Norman can be reached at Plant 19, ext. 1335, for more information.

'Christmas in Mexico' Tour List to Close

Final call is out for GD travelers who want to observe Christmas in another country.

There are still a few openings on the "Christmas in Mexico" tour sponsored by Astro Management Club for all General Dynamics people and their friends. Tour leaves San Diego Dec. 19 and returns Jan. 3. Entire cost is $365 per person.

Last-minute reservations will be taken this week by James Hardison of Convair, tour conductor. Contact him at his home phone, 276-5805.

Mgt. Club to Sponsor Open Bowling Classic

All General Dynamics employees will be welcome to participate in the Singles Bowling Classic to be sponsored by GD/Astro Management Club Jan. 16, 17, 23 and 24 at four San Diego area locations.

Each bowler will roll five games across 10 alleys at each location for a total of 20 games. Entry fee is $5, with details available from Forest Erwin, Plant 71, ext. 2884.

Top 20 bowlers among Management Club members entering the Singles event will represent Astro in the Zone "A" Management Club meet March 13 and 14 at Clairemont Bowl. Top finishers in this event will go to the California State Bowling Tournament in San Francisco in May.

Rockhounds Offering Gem, Mineral Class

A course in gem stone and mineral identification is being offered to interested GD/Astro employees and their families through auspices of ARA Rockhounds.

Taught by C. E. Buchanan, a qualified gemmologist, the basic course for beginners consists of about 30 two-hour sessions. Included is some basic geology, determination of specific gravity, and optical analysis.

Meetings are held evenings, 7:30 to 9:30 in ARA Clubhouse, and total tuition is $4 per person. More information is available from ARA Commissioner Fred Baugh, Plant 71, ext. 3580.

Indian Pass Area Lures Rock Fans

Trip-of-the-month for ARA Rockhounds is an outing Dec. 12 and 13 to Indian Pass in search of deep blue dumortierite, jasp-agate, banded and moss agate, petrified palm root and fiber.

Participants will meet at Gold Rock Ranch, nine miles north of U. S. 80 on Ogilby Road at 9 a.m., Saturday (Dec. 12), traveling from there by caravan to the campsite.

Gerald Halterman, field trip chairman, ext. 4283, or 444-5943, has advised all taking part to bring a water supply plus digging tools; also, to "gas up" in Calexico or Holtville, nearest service stations to the camp area.

Final Six 'Cadillac' Performances Due

Only six opportunities remain to catch a regularly scheduled performance of Astro Players' production, "Solid Gold Cadillac" starring Lillie Mae Barr.

The show is staged at 8:30 p.m. today (Dec. 2), Dec. 4, 5, 9, 11, 12, in ARA Clubhouse auditorium.

Reserved seats for the comedy are available through employee services at $1.50 each. General admission tickets at $1 are available at the door.

Slot Racers' New 'Home' Ready Soon

A new "home" is in the offing for members of ARA's popular Slot Car Club.

This group, devotees of racing small electric-powered cars over slotted tracks, has been operating for some months in the picnic pavilion in the ARA Area.

Now a new building, complete with room for the track layout as well as room for workshops, etc., has been made available to the group in the Western Town area. Currently, work parties are devoting Saturdays to preparing the building for future use.

Details involved in the pending track move, nominations for officers and discussion of future plans for the group will headline a special meeting set for 7:30 p.m., Dec. 10 in ARA Clubhouse.

"We plan to reorganize our entire racing program," said Commissioner Ed Foland. "We will welcome guests who are interested in our activities and will devote some time to showing them our new facilities and outlining plans."

Foland may be reached at ext. 746, Plant 71, or at 273-2487 evenings to discuss details of the activity.

Lawson Is Winner During Povpex '64

ARA Stamp Club President A. W. Lawson, Dept. 374-3, successfully represented the club in Povpex '64 (Pomona Valley Philatelic Exhibition) sponsored recently by GD/Pomona Stamp Club.

Lawson won first place trophy in the general foreign category, the Dr. I. Wolf award for best Israel exhibit, and a $25 cash prize.

The ARA group has slated two meetings this month. The first will be held tomorrow (Dec. 3), and election of officers is set for the second on Dec. 17. Both will convene at 7:30 p.m. in ARA Clubhouse.

BRIDGE CLUB SLATES MASTER POINT NIGHT

Ceil and Howard McCullough (north-south) and Jim Stephenson and Al Buggele (east-west) were winners Nov. 13, while George Enymann and Don Giegler (E-W) and Lucille Donan and Tony Miller (N-S) won Nov. 20 in ARA Bridge Club competition. Regular monthly Master Point night has been set for Dec. 4.

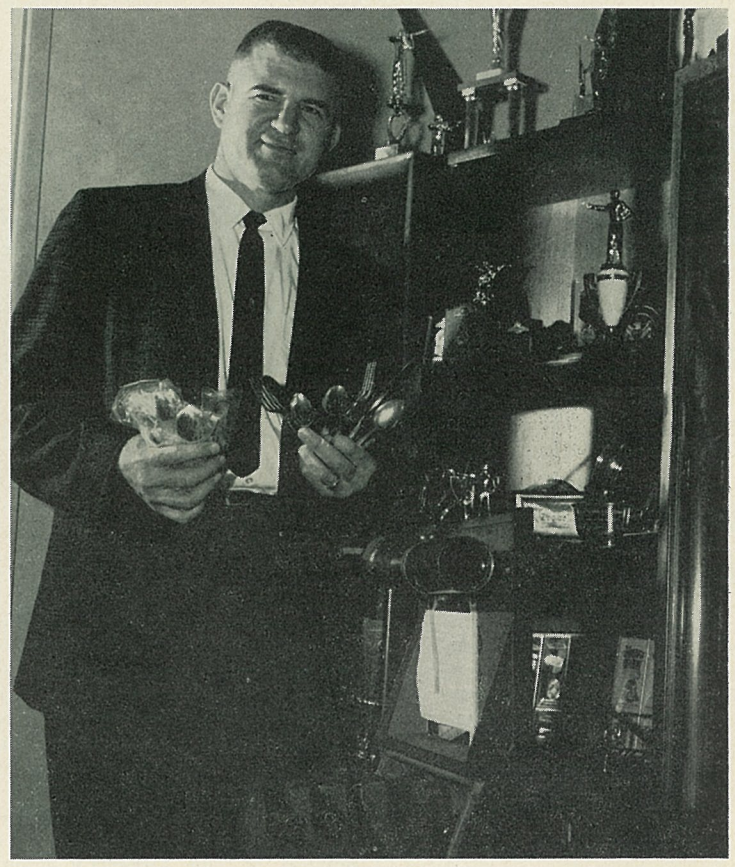
BATHYSCAPHE FILMS SET AT DIVER MEET

Dr. Eric Barham, biological oceanographer with the Naval Electronics Laboratory, will be principal speaker Dec. 9 when the ARA Astro Divers meet at ARA Clubhouse, 7:30 p.m. Dr. Barham's presentation will include films of the San Diego trough taken from the bathyscaphe Trieste.

TOASTMISTRESSES WILL ELECT NEW OFFICERS

Serra Mesa Toastmistress Club will hold its semi-annual election of officers at 7:30 p.m., Dec. 7 at ARA Clubhouse. The accompanying program will be themed "Tomorrow's Footsteps." Visitors are welcome and information is available through President Scarlett Smith, ext. 1313.

Sports & Recreation



ARIZONA, ETC., CHAMP—GD/Astro's Al Schindler, Dept. 380-6, displays some of trophies won for marksmanship in innumerable pistol matches during last eight years. Non-resident Arizona title—and more silver—was added recently to six other state championships he has won.

Crack Shot

Schindler Adds Arizona Title To Roster of State Pistol Wins

For most marksmen, winning the Arizona State Pistol Championship might be considered a crowning accomplishment.

However, a chat with GD/Astro's Al Schindler, Dept. 380-6, who recently took the non-resident title (almost casually, while on a vacation "camping trip") will bring forth the modest admission that Arizona is only "another notch on his pistol grip."

During the last eight years, Schindler has won state pistol championships in (alphabetically) Colorado, Kansas, Missouri, Ohio, Utah and Wyoming! His Arizona victory was quite decisive: he won 15 of 16 matches.

How does he do it?

"I had good training," Schindler says, referring to his Marine Corps background. He's now Lieutenant Colonel, USMC Reserve, and perhaps his most treasured awards are the heavy, gold "distinguished" medals he has earned for both pistol and rifle.

In the Schindler home, these are displayed in a sideboard loaded with prizes from what he describes as "so many matches I couldn't begin to total them up." The "loot" includes watches, desk sets, plaques—and a drawer full of medals.

Prominently displayed are a number of trophies earned in ARA Pistol Club competition, where he currently holds the year's lead.

Mrs. Schindler is perhaps happiest with the awards traditionally presented to winners in major sanctioned matches: to date her husband has collected a full set (service for 12) of sterling silverware.

Schindler Scores In Pistol Matches

Al Schindler scored 295 with 15 Xs to win master class of a .22 Police Course match fired last month by ARA Pistol Club, topping a 13 X score of 294 by Warren Ranscht.

In expert class, Angrim Carlson fired 280 and Bill Dittmann, 258; while Lyle Ewing's 238 led 224 from Byron Clapper in sharpshooter bracket.

Schindler scored another win with 288 in a Center Fire match, followed by Ranscht with 265, and Roland Schneider with 261.

ARA Calendar

(GD/Astronautics Recreation Association has some 40 activities in operation for employees. For information call ARA Headquarters, ext. 1111.)

★ ★ ★

ASTRO PLAYERS — "Solid Gold Cadillac" with Lillie Mae Barr, ARA Clubhouse, 8:30 p.m. curtain-time. Performances today (Dec. 2), Dec. 4, 5, 9, 11, 12. Reserved seats, $1.50; general admission, $1.

GARDEN CLUB — Family Christmas party tonight (Dec. 2), 7 p.m., Floral Association Bldg., Balboa Park.

GOLF — Pinehurst tournament Dec. 5, 6, at Bonita Golf Club.

JR. RIFLEERS — Club shoot Dec. 5, CRA Range. Meeting Dec. 16, 7 p.m., ARA Clubhouse. Christmas Turkey Shoot and party, 8 p.m., Dec. 19, CRA Range.

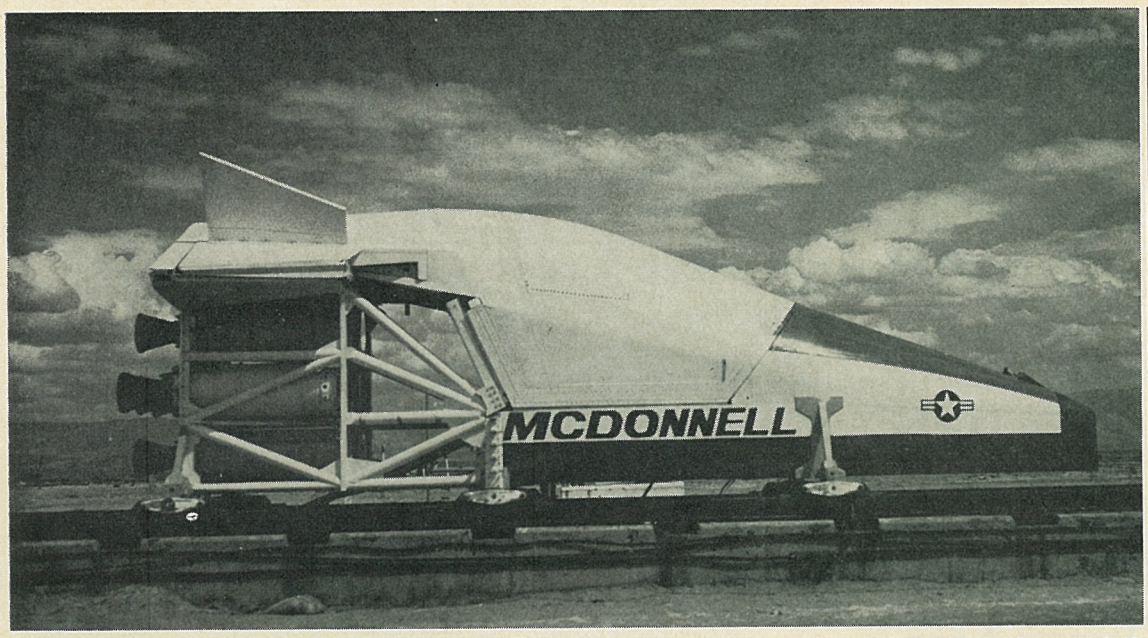
Few Tickets Remain To ARA Yule Dance

Tickets are going fast for ARA's sixth annual Christmas dance to be held Dec. 19 in the International Room, El Cortez Hotel.

However, Commissioner Willard Brassell said some are still available, and may be purchased for $1 each at employee services outlets. Reservations for groups of 10 or more are still being accepted by Joyce Oviatt, ARA Headquarters, ext. 1111.

The gala event will feature music by Buster Carlson and his ARA band, and night club entertainer Bernie Mack has been booked for the intermission show.

Door prizes—20 turkeys—will be awarded.



FAST RIDE—Rocket-powered F-111 escape module, mounted on specially constructed test sled, approaches 1,000 mph as it speeds down track at Holloman AFB. Tests will determine in-flight stability under simulated ejection conditions.

F-111 Cockpit Simulated For High Speed Ejection

Simulated escape test flights of the F-111 crew module are being carried out at the Air Force Missile Development Center, Holloman Air Force Base, N. M.

The center is assigned to the Air Force Systems Command.

A specially designed test sled carrying a simulated F-111 cockpit provides the project's test environment. Attached to two track rails by steel slippers, the test vehicle is pushed to speeds of nearly 1,000 miles an hour by three stages of rocket-motor firings.

At these great speeds, the crew escape module ejects from the test vehicle by its own solid propellant rocket motor.

Major emphasis has been placed on the test performance of the system that separates module from aircraft.

To prevent accidental separation during flight, the system cannot be activated until the capsule's rocket motor fires. Firing activates an explosive charge installed between the capsule and aircraft that completes the separation. On-board cameras record the process in detail so that the critical moment of separation can be evaluated later.

In-flight capsule performance is also observed closely. With a portion of the aircraft's wings acting as stabilizers, the module must travel in a trajectory that offers the crew a satisfactory measure of safety. Pitch and roll of the vehicle must be kept to a minimum during the burning time of the booster.

Other test instruments record vibration levels, gravity forces, and actual sounds the crew will hear during capsule rocket firing and separation.

Five on-board cameras observe parachute deployment, test dummy motions, and sled and capsule separation. Numerous high-speed cameras sighted on the test area record the sled run and the entire ejection sequence.

The Holloman track program, which is scheduled to continue over a two-year period, will determine reliability of the ejection system and stability of the escape vehicle under simulated flight conditions. GD/Fort Worth has set test criteria to include eight consecutive successful track tests before the system is termed operable.

The module provides shirt-sleeve environment, safe escape and recovery through the operating envelope of the F-111—including zero speed and underwater escape.

The ejection vehicle, developed by McDonnell Aircraft Co. of St. Louis, includes the entire crew compartment and a portion of the fuselage and wings.

Air National Guard Honors F-102 Group

Top award for most operationally-ready ADC unit in the Air National Guard went to the F-102A-equipped 149th Fighter Group, Kelly AFB, Texas.

The plaque award is planned as a yearly event by the National Guard Association of the U. S.

Col. Nowell Didear, Commander of the Texas Wing, presented the award at special ceremonies to Lt. Col. James T. Crump, 149th commander.

The 149th also received high rating in the recent Operational Ready Inspection, reports Convair field service representative, Joseph L. A. Gallant.

MOMENTOUS OCCASION—Few General Dynamics employees have reached the milestone observed last month by Walter Koch of GD/Astronautics' Plant 19 sub-assembly (Dept. 718), shown here as President J. R. Dempsey presented him with 40-yr. jewel.

'First' at Pomona

Photography Offers Solution For 'Missing' Fingerprints

Fingers that can not be printed, and no record of birth would probably be an advantage to a criminal.

But for Rose Vulyak of parts control and standards (Dept. 6) the situation was a nightmare, happily solved, however, with assistance of industrial security officers and a "first" in photography at GD/Pomona.

Rose's problems arose last June when she applied for employment. An inquiry to her hometown of Youngstown, Ohio, disclosed there was no record of her birth. It was no small effort, but with assistance from a lot of people, a birth certificate was obtained and the first hurdle taken toward security clearance.

Meanwhile, a second problem developed. Repeated attempts failed to produce readable prints of four fingers—ring and small finger on each hand.

Rose, who had never been fingerprinted, recalled that seven years ago her hands were badly burned in a home accident. Her son, then 3 years old, had started a fire in a wastebasket. The four fingers were injured when she carried the burning material outdoors.

J. V. Householder of industrial security, an ex-FBI agent, worked with engineering photo lab personnel last month to secure photos of the finger tips. Using cross lighting as low as possible, pictures were obtained in which the ridges were clearly defined.

Rose is the only GD/Pomona employee with photos instead of prints of her fingers on file. Together with a brand new birth certificate she now has positive proof of citizenship, and identification.

HIGHLIGHTS — When Rose Vulyak's fingers could not be printed for security identification, GD/Pomona photographers furnished pictures. Using cross lighting, ridges on fingers burned seven years ago, were clearly defined.

C-141 Idea Produces Christmas Windfall

Two Convair Dept. 115 men put some extra Christmas money in their pockets with an Employee Suggestion that will save the division time and money on the milling of C-141 parts.

N. L. Valentino and C. J. Popp each received $93.06 last week as partial payment. They will get like sums in six months.

They devised a two-part template and profile fixture which cuts downs setup time and processing of parts during machine shop operations. Their pay-off was based on the time saved—one hour on each of 1,152 parts.

POMONA'S MAIL ADDRESS CHANGED

GD/Pomona's mailing address has been changed following opening of a new Pomona post office serving division. The box number was changed from 1011 to 2507.

New Value Engineering Manual Given to Design Engineers

A new Value Engineering tool has been placed in the hands of GD/Astronautics design engineers as distribution was completed last month on the first section of the division's Design Cost Manual.

Section I—Mechanical—is the first of three parts presently scheduled to comprise the Cost Manual. Sections dealing with electrical/electronic design, and testing, will be forthcoming as they are prepared.

The manual's purpose is basic to GD/Astro's philosophy of producing the highest quality products for the lowest feasible cost. By using the Cost Manual, division engineers can deal as never before with product cost at the crucial time—during the design phase prior to production release.

As the manual itself explains, a designer is initially concerned with functional or performance aspects of a design; then, typically, discovers several ways to do the job.

Here is where cost must enter the picture: if the designer can properly assign cost values to his alternative plans, he can direct his design along the minimum cost path while achieving required performance, schedule reliability, maintainability and quality goals.

Within its nine chapters, the Mechanical Section provides data, charts, and explanations which permit the designer to assign reasonably accurate costs to "nuts and bolts" aspects of his design.

He can determine, for example, the cost of materials, compare the relative fabrication expense for machining, casting, forging, extrusion and sheet metal. The volume goes so far as to consider that weight is a cost factor since more men — or machines — are needed to handle heavy parts.

Preparation of the Cost Manual is a study in cooperation, both between GD/Astro departments, and other General Dynamics divisions.

Produced in the VE section of research, development and engineering (Dept. 521-0), where original research supplemented by trade journal analysis turned up much of the data, the book also draws on information supplied by material department, GD/Pomona, GD/Convair and GD/Fort Worth.

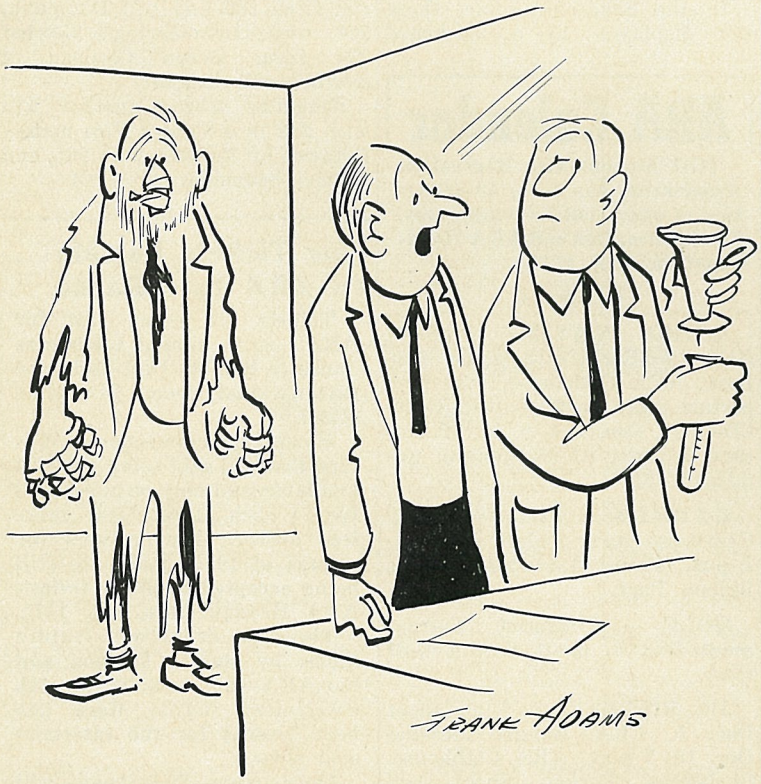
The VE function within Dept. 521-0 will periodically review all portions of the manual to insure that material is kept up to date through appropriate revision.

Spectators Flock To Charger Movie

Convair's eight-minute color movie depicting development of the Charger drew so much attention at a recent Washington, D. C., showing that the film wore out before all the crowds lined up had a chance to see it.

"A Bird In Hand," as the film is appropriately titled, made its debut at the Association of the U. S. Army annual meeting the middle of last month. Nearly 2,000 spectators, in groups of 10, crammed the General Dynamics Theater during the three days (Nov. 16-18) to view the story of the company's revolutionary counter-insurgency plane from concept to completion.

The movie was run continuously—10 hours a day—until the film gave out from usage.



"One thing about old Adcock . . . when he makes a test of rocket fuel he finds out first hand . . ."

KEY READERS — Examining early "first edition" copy of new GD/Astro Design Cost Manual with W. W. Withee, vice president — engineering, seated, are F. D. Applegate, left, and Andrew Kalitinsky, engineering assistant program directors for Space Launch Vehicles and Centaur, respectively; and C. J. Dunn, program director, Atlas Weapon System.

GENERAL DYNAMICS

NEWS

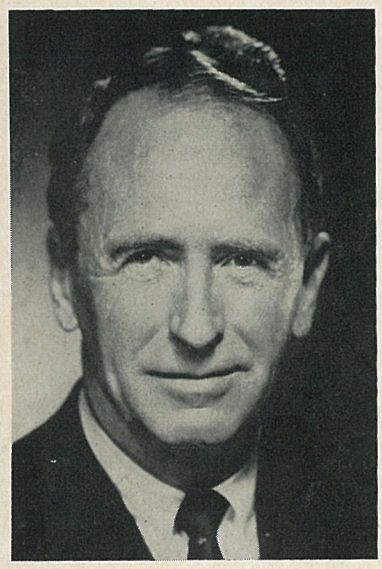
GD

ASTRONAUTICS EDITION

Vol. 17, No. 26 PUBLISHED BY GENERAL DYNAMICS CORPORATION Wednesday, December 16, 1964

Seasonal Greetings From Roger Lewis

"For 2,000 years, there has been no better way of expressing Christmas than 'Peace on Earth to Men of Good Will.' Peace remains an uneasy thing today, but during 1964 the world has moved closer to its reality and will, we pray, do so again in 1965.



"The people of General Dynamics have an important part in helping to achieve that age-old hope. In every way that we can continue to advance it, we enrich our own lives and help ensure the happiness of our future generations.

"To each of you and to your families let me express my wishes for a Happy Christmas and for a rewarding New Year ahead."

Roger Lewis
President

'Operation Underbrush' To Slash Paperwork

Operation Underbrush is under way.

At GD/Astronautics, the Corporation-wide program to "clean out the underbrush of excessive paperwork and ineffective communication" was kicked off last month by President J. R. Dempsey at meetings for supervision.

Formal announcement of the program will be made to all employees today (Dec. 16) via Division Notice.

The GD/Astro program will consist of an intensive effort designed to (1) increase awareness of the unnecessary expense and distraction resulting from superfluous paperwork, (2) re-emphasize significance of existing division programs for reducing paperwork, (3) re-evaluate every manner in which paperwork is now utilized at GD/Astro, and (4) explore new avenues toward overall improvement of communications.

Emphasizing that "paper" is an essential element in division operations, Dempsey has directed Operation Underbrush toward elimination of the superfluous, citing examples indicative of the scope of the problem:

Graphic reproduction now prints between two and 2½ million sheets of paper weekly. In five years, 5,225 TONS of paper has been used!

Each week, three engineering release reports require a stack of paper 69 feet high!

Data processing has used almost 89 million pieces of paper this year!

Although paper itself is not too costly, Dempsey pointed out, the things which are done with it run up the bill. There is warehousing and distribution expense; writing or printing on it costs money, as does handling it through in-plant or regular mail. Then there is the cost of maintaining security control, filing, etc., etc., until finally we pay for its disposal or salvage.

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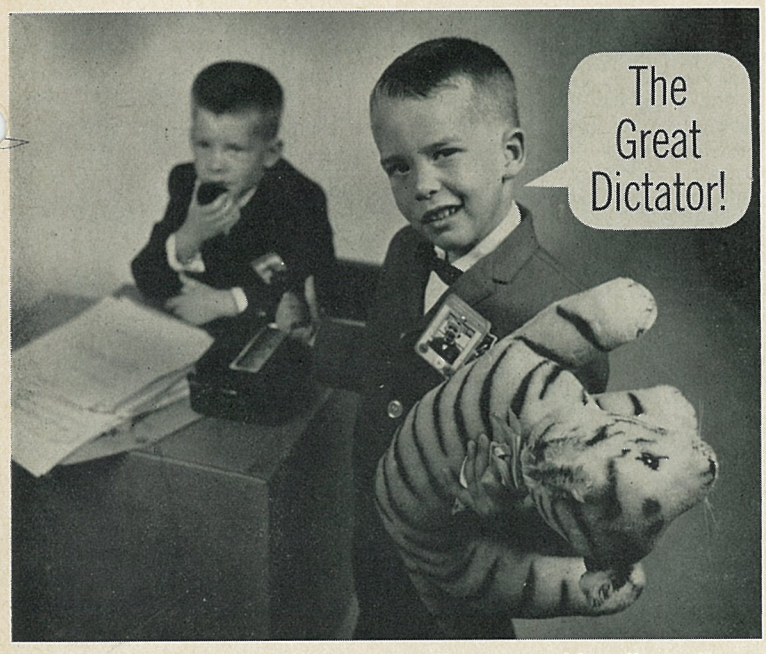


OPERATION UNDERBRUSH—Many "paper problems" are "people problems." To pinpoint a few of the human elements under attack by the Underbrush Tiger, GD/Astro Photographer Bob Weissinger drafted his sons, Marty, 5, and John, 3, as models for series of tongue-in-cheek photo-cartoons beginning here. Object is implied: "Out of the mouths of babes . . ."

Scholarships To Be Awarded At Kids Party

For the first time, two scholarships will be presented in conjunction with the annual Christmas party for underprivileged youngsters to be held Saturday (Dec. 19) in Astronautics cafeteria.

Each worth $250, one will go to a boy, one to a girl. They will be for use in additional training in trade or technical fields or in regular college courses.

Money for the scholarships was raised by Astro Wives Club with an assist from ARA Teen Club. The Wives Club raised $250 through the sale of craft items, candy, and through participation in special events. Another $250 was raised at a Teen Club dance.

Each of the 150 teen-agers invited has been given an opportunity to apply. Special drawings during the party will decide winners.

Meanwhile, plans for this annual event are all but set, involving the efforts of many volunteers.

Each of the youngsters taking part will receive special gift items and clothing. They will be brought to the party, entertained, fed and presented with gifts.

Con-Trib-Club provided funds for purchasing clothing. Salvation Army supplied the names of the needy and will help administer the party. ARA volunteers, many of whom were on hand Monday at a wrapping party to prepare and catalog the gifts, will act as hosts and hostesses.

Vendors supplying both Prophet Company and Davidson Brothers have supplied food and treats. Employees of the two firms have donated their time in preparations, and will help serve refreshments. Astro's transportation department is making available vehicles to bring the teen-

(Continued on Page 2)

Depts. Adopting Needy Families

"Adoption" procedures for more than 25 needy families are already under way as General Dynamics/Astronautics employees turn their thoughts to helping others during the coming holiday season.

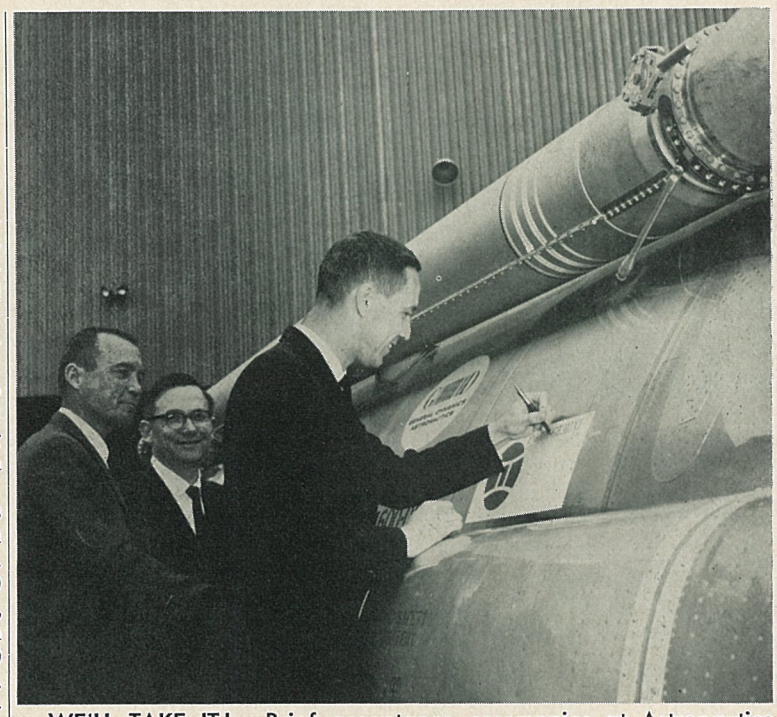
Employee services reports over 25 of the 36 families carried on needy lists have been "adopted" to date. In most cases, departments will provide everything the family needs for Christmas.

Some groups will help local charitable agencies in their annual projects, some will provide for orphanages on both sides of the border, while others will assist needy Indian families.

Next Monday (Dec. 21) the traditional "cleaning of the pool" will take place in Bldg. 2 following normal work hours. Volunteers will collect coins thrown there through the year. Coins, plus those deposited in candle receptacles around the plant, will be used to help the needy.

Another surprise source of funds this year was GD/Astro's General Safety Committee chaired by J. P. Hopman. Throughout the year, this group has imposed "fines" on members late or absent from monthly meetings. The 1964 take totalled $17, and last week was turned over to employee services for the fund.

Information on all phases of the in-plant Christmas effort is available through employee services, ext. 2328, Plant 71.



WE'LL TAKE IT!—Brief acceptance ceremonies at Astronautics Dec. 1 saw first SLV-3 for use in Project Gemini completed prior to airlift to Cape Kennedy. Signing special plaque is NASA Astronaut Donn F. Eisele, while NASA's Jerome Hammock, center, and Astro's C. S. Ames, vice president, look on. Gemini is manned space flight program bridging gap between Mercury and Apollo, manned lunar exploration program. Atlas SLV-3 will launch Agena target vehicle for orbital rendezvous and docking program.

SLV-3 Off to Cape In Project Gemini

An Atlas standard launch vehicle (SLV-3) destined to begin still another chapter in the continuing story of Atlas contributions to space exploration was airlifted Dec. 3 to Cape Kennedy.

It will be used in Project Gemini.

Gemini is the manned space flight program bridging the gap between Project Mercury in which Atlas chalked up a perfect four-for-four manned launch record, and Apollo, the manned lunar exploration program.

GD/Astronautics builds Atlas SLV-3s for the Space Systems Division, AFSC, which provides the complete SLV-3 launch systems used in Air Force and National Aeronautics and Space Administration (NASA) space programs.

Project Gemini is under the direction of NASA's Manned Spacecraft Center, Houston.

The Atlas SLV-3 accepted in brief ceremonies Dec. 1 at Astronautics is the first of its type earmarked for launch in support of NASA programs. And it will be the first SLV-3 to be launched from Cape Kennedy.

Donn F. Eisele, NASA astronaut, and Jerome Hammock, both of the Manned Spacecraft Center, were principals in ceremonies along with C. S. Ames, Astro

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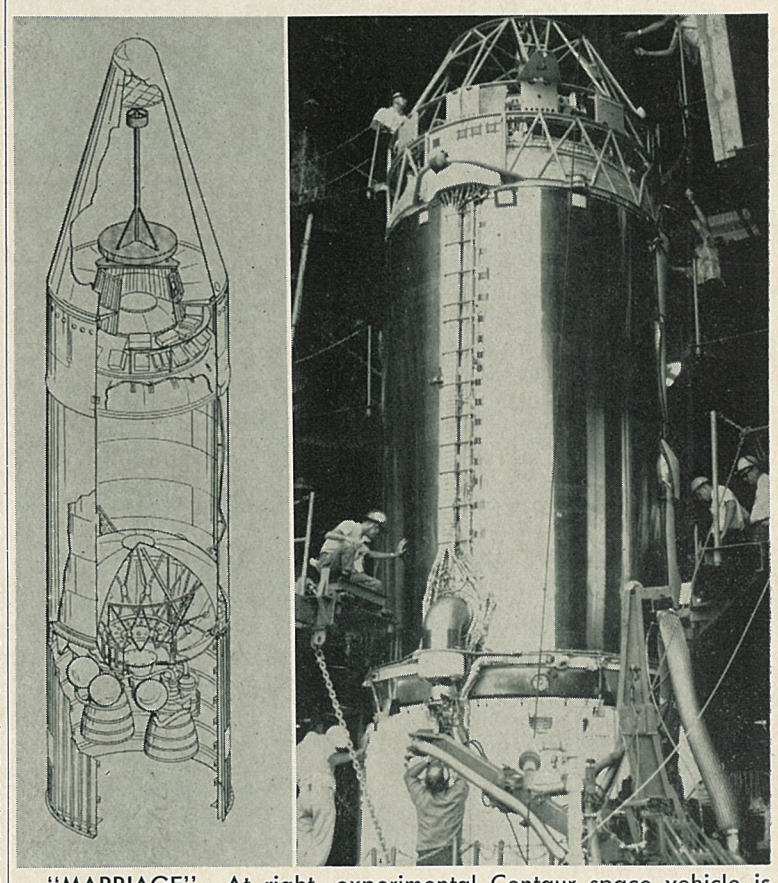


"MARRIAGE"—At right, experimental Centaur space vehicle is mated to top of Atlas at Cape Kennedy in preparation for research and development test flight involving simulated Surveyor spacecraft. At left is sketch showing shape of 2,100-lb. payload model, instrumented to obtain data on vibration characteristics and temperatures in Centaur nose fairing. GD/Astro-built AC-4 was successfully orbited Dec. 11 and achieved all primary flight objectives.

Two 30-year men were honored recently at Astronautics, both Dept. 758-0, Ray Kendall, left, and H. J. Hawthorne.

'Operation Underbrush' To Slash Paperwork

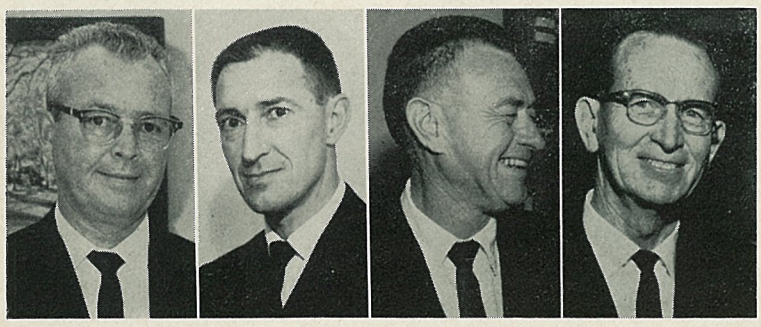
(Continued from Page 1)

And, to these tangible costs, there is added the greatest expense of all: the fact that each time a piece of paper is received, it must be read.

If the paper is unnecessary, this time is wasted as the recipient reads, struggles to understand, perhaps even makes a phone call to clarify intent. Finally, he has to decide what to do with it: whether to discard, reply, file — or send it along to somebody else.

Thus, Operation Underbrush is not without its targets, which, during coming weeks will be pinpointed and come under direct fire from committees appointed to deal with them, and from employees who join in the division-wide effort.

The goal is not only hard cash savings through elimination of the unessential, but increased business efficiency to enhance GD/Astro's position in a highly competitive field.



Latest to receive 25-year service recognition at Astronautics are, from left: Joseph P. Miller Jr., Dept. 420-5; F. D. Applegate, Dept. 635-0; S. R. Carpenter, Dept. 504-2; F. S. Perkins, Dept. 250-1.

Service Emblems

Service emblems due during the period Dec. 16 through Dec. 31.

Thirty-year: Dept. 250-1, F. S. Webster.

Twenty-five-year: Dept. 360-1, G. S. Oliver; Dept. 641-1, J. R. Shuter; Dept. 813-0, J. B. Gerding; Dept. 951-6, W. L. Dittmann.

Twenty-year: Dept. 585-1, C. R. Walker Jr.; Dept. 673-0, C. E. Dayton.

Fifteen-year: Dept. 193-3, C. E. Ulrey; Dept. 549-9, R. R. Vincent Sr.; Dept. 718-0, G. A. LaFond; Dept. 971-5, A. L. Snyder.

Ten-year: Dept. 131-1, Lillian M. McCormick; Dept. 143-5, R. A. Snyder (due Nov. 27); Dept. 195-0, J. H. Johnson; Dept. 504-4, J. C. George; Dept. 549-3, G. F. Miller Jr.; Dept. 568-1, G. A. Shuler; Dept. 654-2, R. I. Kreisler.

SYCAMORE

Fifteen-year: Dept. 976-3, J. A. Dailey.

Ten-year: Dept. 976-3, E. D. Cordle.

Papers Presented

ASTRONAUTICS

ROSCISZEWSKI — Jan, Dept. 596-0. "Inviscid Hypersonic Flow about an Arbitrary Body," submitted to AIAA Journal.

SIMSON—Anton K., Dept. 512-2. "Gain Characteristics of Subsonic, Pressure Controlled, Proportional Fluid Jet Amplifiers," ASME winter meeting, New York, Nov. 29-Dec. 4.

WIBERG—D. M., Dept. 556-7. "Optimal Feedback Control of Spatial Xenon Oscillations," submitted to Transactions of the American Nuclear Society.

Invention Disclosures

ASTRONAUTICS

FOLSOM—V. H., Dept. 490-1. Metalized Foam or Metalized Foam Panels.

HERBERT—D. E., Dept. 547-5. Digital Transducer.

LEADON—B. M., with W. V. CARTER, Dept. 511-1, and W. H. GALLAHER, Dept. 596-0. Device for Cooling and/or Controlling a Hypersonic Vehicle.

McILWRAITH — C. G., and K. E. COUGHLIN, both Dept. 588-2. Constant Azimuth Device.

ROLFE—C. W., Dept. 143-2. Inspection Gage.

ZOVANYI—M., Dept. 490-4. Soft Tool for Welding Thin Gauge Materials.

Retirements

DeBOLT — Harry, Dept. 975-0. Seniority date, April 30, 1956. Retired Oct. 1.

DOMINGUEZ—Milton P., Dept. 387-2. Seniority date Oct. 30, 1950. Retired Nov. 1.

ENGLEBRIGHT — F. M., Dept. 322. Seniority date, March 29, 1960. Retired Oct. 6.

PALMER—Clarence J., Dept. 336. Seniority date, Nov. 10, 1959. Retired Dec. 1.

WHITE — Richard E., Dept. 146-4. Seniority date, Aug. 10, 1956. Retired Sept. 30.

Personals

I wish to extend my deep appreciation for the many condolences tendered me on the loss of my mother, Margaret.

John A. (Jack) Dunleavey, Dept. 970-1

Births

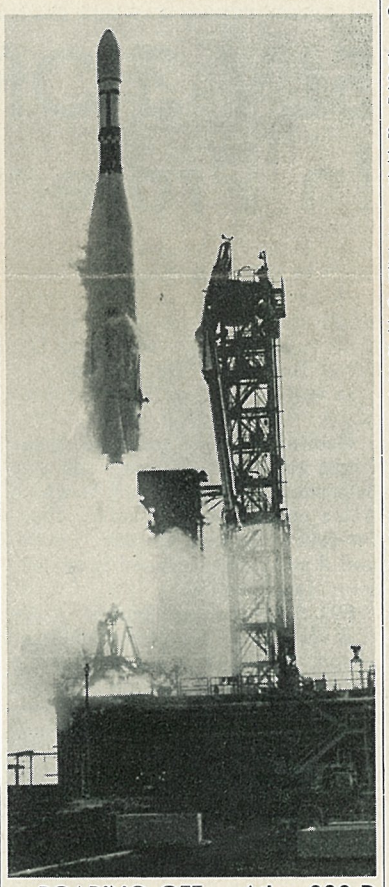
CALUORY — Son, Kimo Ryan, 5 lbs., 2 oz., born Dec. 2 to Mr. and Mrs. Emil P. Caluory, Dept. 522-7.

KERR — Son, James Arthur, 7 lbs., born Oct. 26 to Mr. and Mrs. J. R. Kerr, Dept. 504-1.

GD/NEWS to Carry Class Schedules

All "Schedule of Classes" notices formerly distributed in-plant by GD/Astro's educational services will be incorporated into the "Log Book Entries" column of GD/NEWS effective with the first edition of 1965 (Jan. 6).

Subsequent editions will carry timely class listings for Astro in-plant and outside courses. Additional information on schedules and classes may be obtained from educational services, ext. 1931.



ROARING OFF — Atlas 288-D with Agena D stage and Mariner 4 spacecraft roars off from Complex 12 at Cape Kennedy en route to planet Mars. GD/Astro crew headed by Orien Reed conducted launch.

Deaths

RIDGE — Fannie, Dept. 780-3. Died Nov. 28. Survived by daughter, Wanda Conley; five grandchildren.

RUIZ — Imogene, Dept. 780-4. Died Dec. 2. Survived by husband, George E. Ruiz; three children.

General Dynamics NEWS

Published by General Dynamics Corporation, One Rockefeller Plaza, New York, N. Y. 10020; with editorial headquarters at 3302 Pacific Highway, San Diego, Calif. 92112, P.O. Box 1950, telephone 296-6611, ext. 1071. Logan Jenkins, editor-in-chief.

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Affiliated editions of General Dynamics NEWS are published in Rochester, N. Y., covering GD/Electronics and Stromberg-Carlson, editorial offices, 100 Carlson Road, HUbbard 2-2200, ext. 2555. Fred E. Voss, editor; and at Groton, Conn., covering GD/Electric Boat, editorial offices at Groton, 446-3129. Ed Caffrey, editor.

In-Plant Study Programs Set

GD/Astro employees planning to attend San Diego City College courses in-plant during the spring semester will find key dates in this program next month.

First milestone is Jan. 4. On that date "application for admission" forms to be completed by all students will be available from educational services (Dept. 130-3), and may be picked up from Laura McGraw or Dick Forrest in Bldg. 33, Col. E-3.

At this time also, prospective students who live in the Grossmont, Oceanside-Carlsbad, Palomar and Southwestern college districts, should obtain a "Special Contract Permit" from their local college.

On Jan. 18, 19 and 21, registration will be conducted in Room 2, Bldg. 17 starting at 4:30 p.m. To register, students must present their completed application for admission, and, if applicable, the "Special Contract Permit."

Courses to be offered include Electronics 75 (a survey of computing systems intended as basic background for EDP personnel) on Mondays; Math 19 (calculus for electronics, including methods and results from calculus of most direct use in study of electronic circuits) on Thursdays.

Also Math 17a (Mondays) and 17b (Thursdays); Quality Control I (Thursdays), II (Tuesdays), III (Wednesdays); Business Management I (Tuesdays); Technical Writing III (Wednesdays); Supervision 23 (Thursdays).

All classes will meet from 5 to 8 p.m., except Math 17a and 17b which are scheduled from 4:30 to 7:30 p.m.

Two Scholarships To Go to Youngsters

(Continued from Page 1)

agers to the cafeteria, with drivers donating their time.

Of special interest to the youngsters will be gifts purchased through still another Wives Club activity — a card party. This October affair earned $305, enough to buy two gifts (other than clothing) for each participant.

Volunteers will turn out at Astro cafeteria from 4 to 7 p.m., Saturday, to help conduct the party, which will also feature entertainment.

SLV-3 Off to Cape In Project Gemini

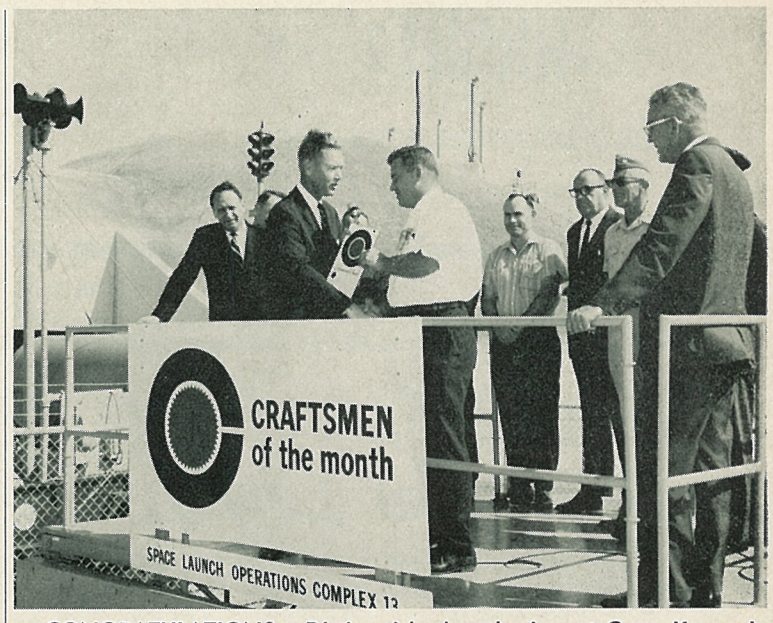
(Continued from Page 1)

vice president and program director—SLV.

Under Ames, Astro's participation in Project Gemini is guided by J. S. Berggren, assistant program director; E. E. Lindgren, program manager; and Jim Minos, project engineer.

At Cape Kennedy Astro SLV program personnel under T. J. O'Malley, launch operations manager, will prepare the SLV-3 for its Project Gemini role. Cal Fowler, test conductor, will head the Astro launch crew.

Launch will be from Complex 14, a veteran Atlas launch site, recently put through an extensive conversion job for its new assignment.



CONGRATULATIONS—Distinguished gathering at Cape Kennedy saw GD/Astro President J. R. Dempsey, left foreground, present first Craftsmanship award at ETR to Foreman C. N. Mullins for Complex 13 employees. Observing at rear are Roger Lewis, General Dynamics president, left; Charles Tucker, Complex 13 assistant site manager; T. J. O'Malley, SLV launch operations manager; Col. Jo K. Warner; K. E. Newton, GD/Astro operations director, ETR. Also present were Bob Gray, manager of NASA Goddard Launch Operations, and Col. Otto Ledford, commanding 6555th Aerospace Test Wing.

Large Cost Avoidance Traced Directly to GD 'Do Good Work'

An auditable cost avoidance of $1,178,908, directly attributable to GD/Astronautics' "Do Good Work" program, has been reported by President J. R. Dempsey.

The savings cover 11 months of 1964 and stem from sharp reduction in the rejection rate of material submitted to inspection by departments participating in Craftsmanship competition.

Dempsey made the announcement during an address to participants in a Department of Defense "Zero Defects" Seminar at San Diego Naval Training Center, Dec. 8.

GD/Astro's dedication to "good work" was illustrated when Dempsey disclosed that 23 consecutive successful flights have now been announced for the Atlas SLV.

The DOD meeting was the third of its kind to be held in recent months, and was attended by more than 500 defense contractors and military officers from states west of the Mississippi River. Earlier seminars were held at Wright-Patterson AFB, Dayton, Ohio, on July 30, and Washington, D. C., Nov. 17.

Speakers at the San Diego session included, besides Dempsey, other aerospace industry executives, G. E. Fouch, deputy assistant secretary of defense for equipment maintenance and readiness; Vice Adm. J. M. Lyle, director of the Defense Supply Agency; and Lt. Gen. R. D. Meyer, director of logistics for the Joint Chiefs of Staff.

GD/Astro's Do Good Work program now encompasses 27 departments, including functions at Eastern Test Range (Cape Kennedy) and Vandenberg AFB (Western Test Range) as well as San Diego.

The program was instituted in 1963 with 13 hardware-oriented departments participating. Since then, the concept has been expanded to include "software" functions, and further developed to provide recognition for GD/Astro suppliers, since they represent an extension of the division's manufacturing capability.

Inspired by words of Astronaut Gus Grissom during a visit to GD/Astro—"The most important thing you can do here is to 'do good work' "—success of the Craftsmanship competition is attributed to recognition of skilled workers who take real and honest pride in jobs well done.

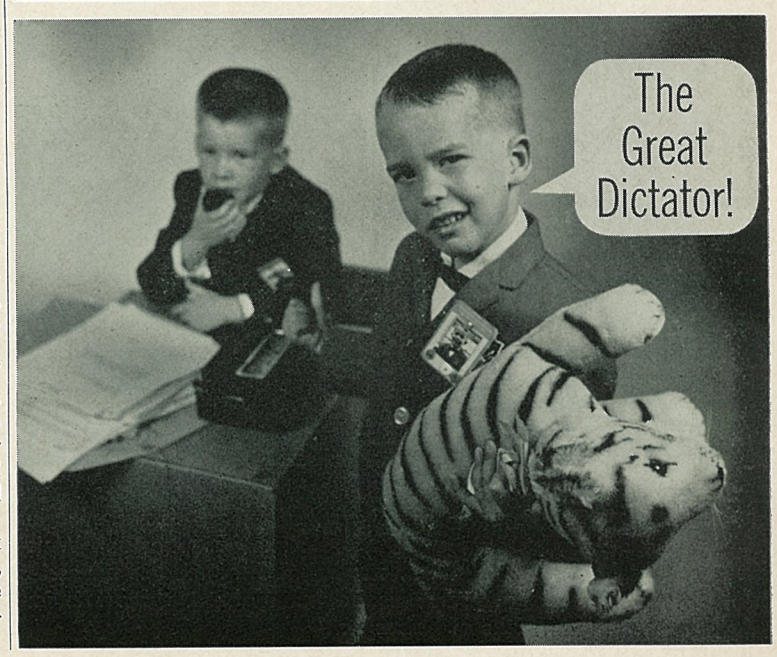
GD/Astro Men Earn City's Appreciation

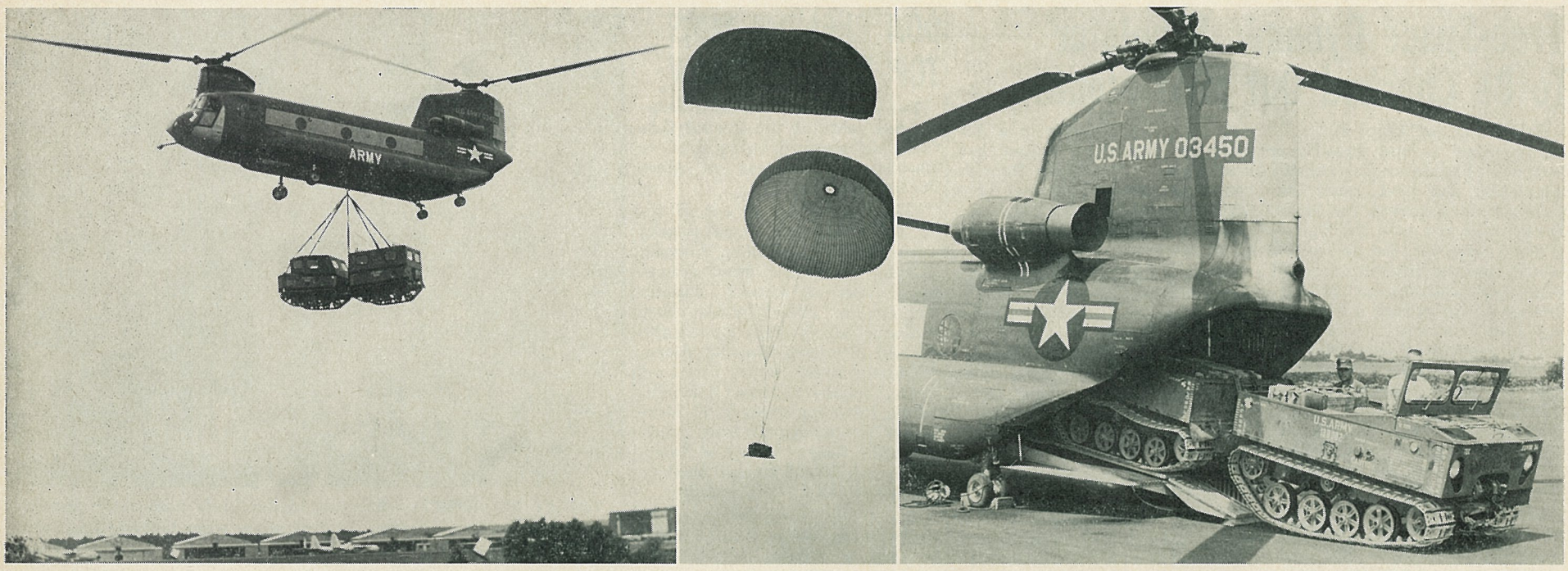
The efforts of several GD/Astronautics men were recognized recently in a special presentation of plaques of appreciation by San Diego Mayor Frank E. Curran.

The plaques recognized volunteer services in the stocking of San Diego buildings licensed to be used as fallout shelters in case of nuclear attack. The services saved some $20,000, Mayor Curran said.

James W. Higgins, Astro traffic administrator and also president of the San Diego Chapter, National Defense Transportation Association, received one plaque on behalf of his group.

Astronautics donated the use of trucks and trailers for this effort, while three transportation drivers donated their time in operating them. The effort began last spring and involved one Saturday per month. Each of 87 buildings already stocked contains two weeks supplies of food, water, sanitation and medical equipment and instruments for the detection and measurement of radiological fallout.





AIRBORNE — Canadair's "Dynatrac," tracked troop and cargo transport demonstrated its capabilities recently at U.S. Army Combat Development Center, Fort Bragg. At right Dynatrac backs into helicopter and at left is hauled aloft by another means. In center, rear unit parachutes to ground.

Pilots Flying in DORA View 'Terrain' Below

An ingenious visual-display system at GD/Fort Worth enables Air Force and Navy crewmen to view the terrain over which they're "flying" in DORA, regardless of the type mission.

DORA stands for Dynamic Operator Response Apparatus. It is a computerized, simulator-like device which records a pilot's many cockpit reactions on a wide variety of programmed flights.

From the wealth of data obtained in the simulated sorties, human engineers can analytically contribute to the cockpit's design.

The display system is in two parts: an Air Force SMK-23 simulating system for on-the-deck sorties; and a series of photographic plates for all other type missions.

Both systems transmit pictures to crewmen through 30-inch screens in front of the cockpit.

When plates must be switched to effect a rather sudden change in flight environment, the pilot experiences "haze" for about 30 seconds.

Plates represent areas in varying size. The high-level photographic plate, for example, represents an area about 50 miles across. The lower-altitude plate is an area of only about five miles.

The amazingly realistic terrain that DORA crewmen see during on-the-deck missions below 500 feet is actually three strips of foam-rubber "mountains, valleys and fields."

Each strip, 14 feet high and four feet across, represents an area about 70 miles long and 10 miles wide. The strips revolve mechanically. As they do, a television camera, backed by banks of fluorescent lights, records the movement.

After viewing one strip, the camera moves over on a track to the next strip. The result is a virtually uninterrupted low-level flight of considerable distance.

All pictures appear in black and white, except Navy landings. Carrier landings include red and green color to simulate the Navy's "meat ball" system of telling the pilot whether he is above or below the desired glide slope.

Also slated for installation soon on DORA is an ingenious eye-camera. The device pinpoints a pilot's visual fixation at any given moment. Film from the camera is synchronized with the recording to provide both stimuli and resulting pilot-action data.

PUSS 'N BOOTS — Barbara Freeman, receptionist in GD/Convair vendors' office, strikes buccaneer pose as she models what appear to be giant flippers. Actually, they are exhaust ducts for 880 transport cabin pressurization system fabricated for 880 spares.

GD Men to Attend Quality Symposium In Miami Next Month

General Dynamics men will take active roles in the National Symposium on Reliability and Quality Control to be held Jan. 12-14 in Miami Beach, Fla.

J. Y. McClure, Corporate reliability director, will serve as moderator on a panel, "Reliability, Cost and Contracting," during the conference which is jointly sponsored by professional societies.

GD/Astro's E. S. Winlund, Dept. 140-0, will present a paper, "Cost-Effectiveness for Optimal Reliability and Maintainability," while a paper by GD/Astro's C. C. Campbell, Dept. 652-5, "High Reliability for Space Launch Vehicles," will be published in the symposium "Proceedings."

Serving as area publicity chairmen for the national event are D. B. Tallon, GD/Fort Worth Dept. 186-2, and W. G. Bjornson, GD/Astro Dept. 527-0.

Safety Standings

Division achieving best record:

Current month: Astronautics, Pomona, Electronics-Roch., Convair, Electro Dynamic all 0.00 for frequency and severity.

Year to date: (1) Pomona, (2) Convair, (3) Electronics-Roch.

Division showing best improvement:

(1) Pomona, (2) Canadair, (3) Convair.

House Committee Briefed by Convair

Convair's oceanography program was outlined in detail in a presentation to the Subcommittee on Oceanography of the House of Representatives Merchant Marine and Fisheries Committee early this month.

The subcommittee, headed by Rep. Alton Lennon (D.-North Carolina), was in San Diego Dec. 2 during a nation-wide tour to gather up-to-date information on oceanography programs.

Robert Devereux, Convair's oceanography program manager, described the development of the long-range telemetering buoy program for Office of Naval Research.

CALIF. DISABILITY BITE TO INCREASE IN 1965

General Dynamics people in California are reminded that a larger bite will be taken out of their salaries next year with the increase of the wage base for contributions to state disability insurance, effective Jan. 1, 1965.

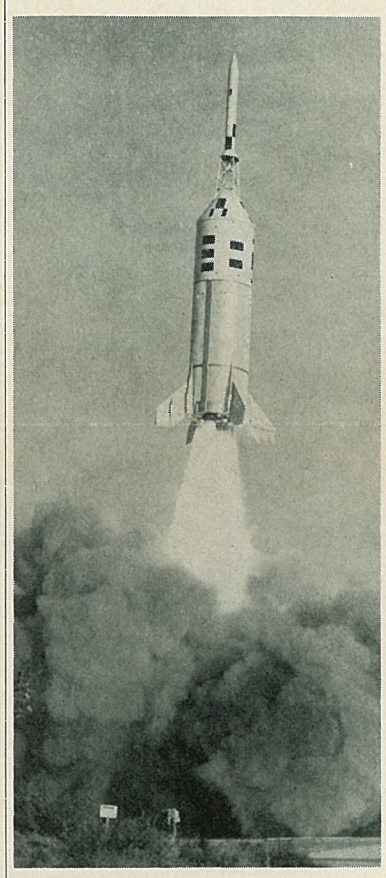
Tax rate remains at one per cent, but this coming year it will be deducted from the first $5,600 earned. Currently, the base is $5,100.

Tracked Troop Vehicle Given Service Tests

"Dynatrac" troop and cargo transport vehicle, developed by Canadair Limited with backing of the Canadian government, has been undergoing service trials in Norway, Southeast Asia, Alaska, the U.S. and Canada and is scheduled for additional trials with the British Army. It ultimately will be tested in Europe, too.

The vehicle, light enough to be transported by helicopter or transport airplane, has virtually unlimited off-road mobility and can operate in all climates from -65 degrees F. to 115 degrees F, with a 2,000-lb. payload or 10 fully equipped soldiers. It has two tracked units linked by a universal joint. All four tracks are driven from a Chevrolet Corvair air-cooled flat-six engine. Steering is achieved by differential operation of a pair of hydraulic jacks at the universal joint.

Maximum land speed is 30 mph. The vehicle also will operate in water.



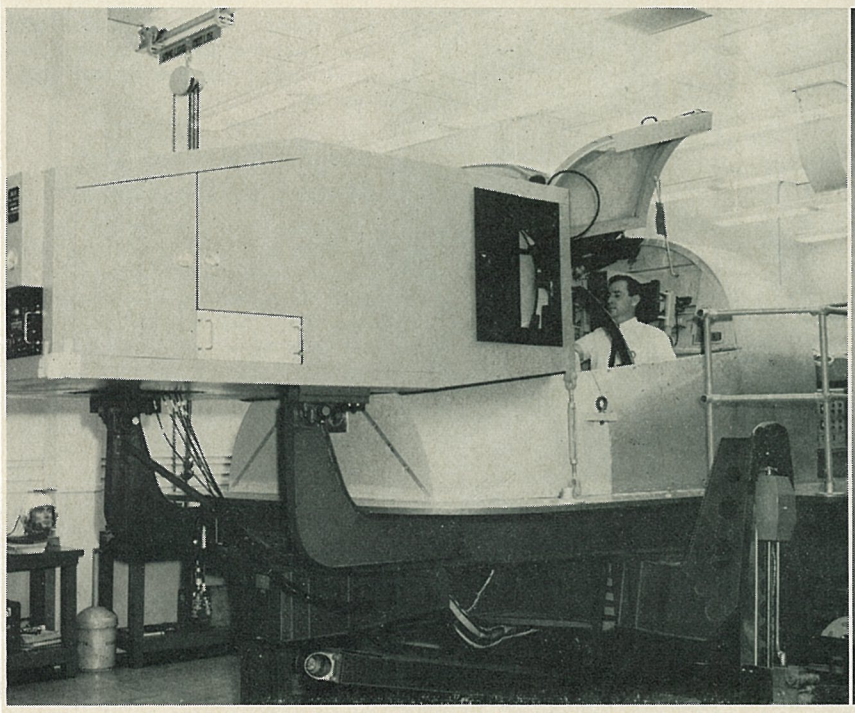
BLAST-OFF—Convair-built Little Joe II launch vehicle heads skyward as it boosts dummy Apollo spacecraft 31,000 feet high in successful launch Dec. 8 at White Sands Missile Range, N.M. Test operation for NASA was hailed as "letter-perfect."

DOYLE SPEAKER ON VALUE TOPICS AT TWO MEETINGS

A total of over 600 heard C. W. Doyle Jr., GD/Fort Worth value control administrator, deliver two presentations on "Value Engineering" recently.

Over 400 heard his speech before the Tinker Administrative Club, Oklahoma City Air Materiel Area, Tinker AFB, Oklahoma City.

Doyle spoke to over 200 at an all-day seminar, "Profit Improvement Through Value Engineering," in Houston. The event was sponsored by American Institute of Industrial Engineers, Houston Chapter, and Industrial Engineering Department of the University of Houston.



REALISM — Pilots checking out in "DORA" at GD/Fort Worth, found experience almost as realistic as actual flight. Contributing to effect was 30-inch screen carrying photos of "terrain" over which they were "flying." Scenes varied to suit missions, from high altitude to "on-the-deck." Left above S. W. Nichols, design engineer, is in cockpit. At right is Chet Zimmerman, DORA designer, inspecting one of photo plates. This simulates high-altitude view.

'Free-Space Dynamic Simulator' To Be Checked Out Next Month

Fabrication of units for GD/Astronautics' unique Free-Space Dynamic Simulator is nearing completion and next month has been set as a target for initial checkout of the new facility.

When complete, the device will permit realistic simulation of the weightless environment by supporting a man in such a way that any force he exerts will cause him to react as though he were in free-space. The unit will be used for study, design and research purposes.

Much of the simulator's "magic"—virtually frictionless pitch, yaw and roll through 360°, plus equally unrestrained vertical and horizontal movement—hinges on use of "air bearings" developed by GD/Astro's E. L. Christian, Dept. 290-2.

The simulator project was started a year ago in life sciences by R. E. Urmston, Dept. 262-3, who suggested that free-space conditions could be duplicated through the use of air bearings. With Christian, he has been responsible for development of the design since that time.

The simulator—looking vaguely like an over-size kitchen stool—towers some 15 feet over the four "air bearing" pads on which it rides. A frictionless "air spring" provides for vertical motion, and gimballing for rotation along three axes is provided by a like number of additional air bearing sets.

Coefficients of friction are expected to be below .00001, since bearing surfaces are separated in operation by a thin "cushion" of air.

Bearing design is such that the device is virtually self-aligning. The arms, for example, are capable of carrying loads in any position due to use of combined radial and thrust bearings.

Besides the advantage of extreme sensitivity, the device has the further merit of being totally self-contained when fully operational. Although factory air will be used to feed the bearings during checkout, a bottled, on-board supply of compressed air or nitrogen will be used during actual operation.

The all-magnesium (for lightness) simulator structure was fabricated by Dept. 290 at Plant 19, with Dept. 452 at Plant 71 handling work on several of the larger units.

Air bearings also played an important role in creation of the ultra-smooth terrazzo floor on which the simulator will ride. This 25 by 33-ft. area had to be completely level, since the slightest tilt would cause the frictionless simulator to coast to the low point.

With an assist from E. J. Barnett, Dept. 451, for precision optical monitoring, a special carriage supported by air bearings was built and fitted with a diamond grinder. This unique tool was used to finish the floor to gemstone smoothness, and level (relative to the earth's center) to within one thousandth of an inch in 10 feet!

(Creation of the simulator floor to such precision is a story in itself. The two-inch thick terrazzo surface caps a 14-inch thick concrete subfloor, which in turn rests on six inches of compacted sand. Thus, the floor is isolated from the general floor of the Bldg. 4 simulator area to break up transmission of vibrations, and preclude the hazard of floor tilt during building settling.)

Human factors studies will be one of the simulator's first uses. The man-carrying bracket is designed to carry a 500-pound load—to accommodate a large man wearing a spacesuit, biopack, and any tools or equipment needed for a variety of experiments.

Questions to be studied with aid of the simulator deal with such things as "anchor points," how to support an astronaut so he can function effectively in a weightless environment; transfer and location, the problems an astronaut may face in moving from one place to another; tool use, maintenance and repair, reactions on application of force and effort, eye-hand coordination and capability, etc.

Besides such life sciences uses, indications are that the simulator will find additional application in hardware studies, including design, test and evaluation of propulsion packages, autopilot response, and docking hardware.

SD Groups View Charger Up Close

San Diego members of the Society of Automotive Engineers and American Institute of Aeronautics and Astronautics had a look at Convair's new multipurpose Charger plane last week when they met at Convair Dec. 9 for their regular monthly meeting.

J. E. Fink, program manager, described the company-funded Charger program from design phases through the manufacture and testing of the prototype airplane. His talk was illustrated by slides and movies.

After the formal presentation, SAE and AIAA members and wives were escorted to the flight test hangar to view the Charger, along with its supporting systems and equipment.

RIFLEERS SET XMAS TURKEY SHOOT MEET

Astro Junior Rifleers will hold a turkey shoot and Christmas party, beginning at 8 a.m., Dec. 19, at the CRA Range, Gillespie Field.

DON RHEAUME WINS TOP PRIZE IN DRAW

Donald Rheaume of Astro won the top prize at the annual Gun Club big game drawing Dec. 8. Rheaume's prize was an Aires Penta Reflex camera.

Other names drawn out of the 92 in the hat and their awards were: William McColley, Convair, pair of binoculars; Fred Jungemann, son of Astro's William Jungemann, .22-cal. pistol; Earl McDaniel of Convair, Instamatic Kodak; Raymond Root of Astro, transistor radio; Bruce Smith of Astro, hatchet; Mike Alianelli, Astro, leather gloves; T. E. Morris of Stromberg-Carlson, hunting knife; George Landy of Astro, deer gamble; and Donald McDaniel, son of Earl, deer gamble.

Among big game listed on the entries were two javelina, downed in Arizona; a bear, one elk. The balance qualified with deer, most shot in Utah, although 8 were taken in San Diego county.

The 100 attending had the rare opportunity of hearing Ed Carey of Stromberg-Carlson describe his hunting expeditions in Alaska, illustrated by slides and movies. He also displayed Polar and brown bear heads and skins taken as trophies.

Jr. Colleges Taking Spring Applications

Spring semester applications for enrollment in the three divisions of San Diego Junior Colleges are being accepted now with spring classes to begin Feb. 3, 1965.

Sites where applications may be processed are: City College, 1425 Russ Blvd., Room A-114; Mesa College, 7250 Artillery Drive, Room A-109; and applications for Evening College will be accepted and processed at either the City or Mesa College campuses.

These offices now are open from 8 a.m. to 8 p.m. During the Christmas vacation (Dec. 21, 22, 23, 28, 29, 30) the offices will be open from 8 a.m. to 4:30 p.m. Last day to file admission applications is Jan. 22.

Christmas in Mexico Tour to Begin Dec. 19

Final briefing for all tourists signed for the "Christmas in Mexico" tour will be tonight (Dec. 16) at 7 p.m. in the Convair executive dining room, Pacific Hwy.

James Hardison of Convair, conductor of the two-week trip, will assign train compartments and give last-minute instructions.

The group leaves Mexicali this Saturday to celebrate the holiday season in Mexico City. They return to San Diego on Jan. 3.

TURKEY SHOOTERS — Bringing down birds with their prowess in Astro Junior Rifleers' Nov. 21 luck event were Convair and Astro sons: Steve Greer, John Tramposh, Steve Callow, and Gerritt Miller. They hold individual "egg" trophies.

EXTENDED WEEKENDS TO MARK END OF '64

General Dynamics people at California divisions and off-site locations can look forward to two long weekends over the year-end holidays.

Pomona division and all plants located in San Diego—Astronautics, Convair, GD/Electronics, Stromberg-Carlson, General Atomic—and off-site facilities in the state will get the Thursdays before Christmas and New Year's Day as bonus holidays.

Except for necessary maintenance and security functions, plants will be closed Dec. 24 and 25, Dec. 31 and Jan. 1. Work will resume at regular shift hours on Dec. 28 and Jan. 4.

AstroLens Will Dine At Christmas Party

AstroLens' annual Christmas party, Dec. 17, 7:30 p.m. at Campus Chuckwagon, will take the place of the regular meeting.

A charge of $2.70 per person will be made. The event will feature installation of club officers, selection of the print and slide of the year, award presentation, and a slide show.

Jay Hudson, GD/Astro Dept. 521-6, will be installed as president with Dick Lytwyn, Dept. 967-1, as vice president. Eric Wolf of GD/Convair, Dept. 6-53, is secretary-treasurer.

Engineering School At State Accredited

Of significance to General Dynamics people in San Diego working toward engineering degrees is the recent accreditation of San Diego State College's engineering school.

State's engineering school is accredited for a four-year period in aerospace, civil, mechanical, and electrical-electronic fields. Master of science degrees also have been authorized in civil and aerospace engineering, in addition to electrical and mechanical engineering.

Single Salvage Day Slated in December

Convair salvage yard adjacent to Gate 5, Plant 1, will be open for employee sales from 8 a.m. until noon this coming Saturday, Dec. 19. This is the only sales day scheduled at either Convair or Astro during the rest of the month as both yards will be closed over the Christmas and New Year's weekends.

JACK MALONE GOES TO ASTRO

Jack Malone, manager of the main Convair cafeteria at Plant 1 for Prophet Co. during the last year, has been transferred to the Astronautics Plant 71 cafeteria operations, according to W. E. Rickman, district manager. Charles Borgatta, in charge of Plant 19 cafeteria, will assume management of the Plant 1 cafeteria in addition to his present duties.

Swissair Flight Tests Conducted

GD/Convair and Federal Aviation Agency flight personnel have been in Zurich, Switzerland, the last week for flight tests of a Swissair 990A to certify it for operation with the tail de-icing systems deactivated.

Convair pilot John Knebel; R. J. Dunn, instrumentation engineer; Gene Whigham, flight test engineer; R. C. Peller, dynamics engineer, were joined by FAA pilot Dean Melton and Collier Walker, FAA flight test engineer, during the test program, Dec. 7-15.

Successful flight tests, establishing that the plane will react normally without use of the empennage de-icing system, will qualify both Swissair and American Airlines 990 versions for FAA certification.

Similar certification has been accomplished on Trans World Airlines' 880s and Japan Air Lines' 880-Ms.

Both Skill and Luck To Pay Off in Prizes

Turkeys, chickens, hams will be "targets" for marksmen competing in the annual open Christmas trap and skeet shoot of CRA Gun Club this Sunday, Dec. 20, at Gillespie Field Range.

All General Dynamics people, their families and friends are welcome to participate in the luck and skill event. Opening round is at 9 a.m.

Even the spectators will have a chance to win some of the valuable prizes if they submit their names in a luck shoot.

Winners in each five-man squad will get prizes. Entry fees depend on value of the items the competitors choose to shoot for.

Besides the main dishes for Christmas dinner, prizes will include bourbon, candy, tiki torches, hibachis, household items such as pitcher and glass sets, bathtowels, hunting equipment—gloves, knives, handwarmers, and other miscellaneous articles.

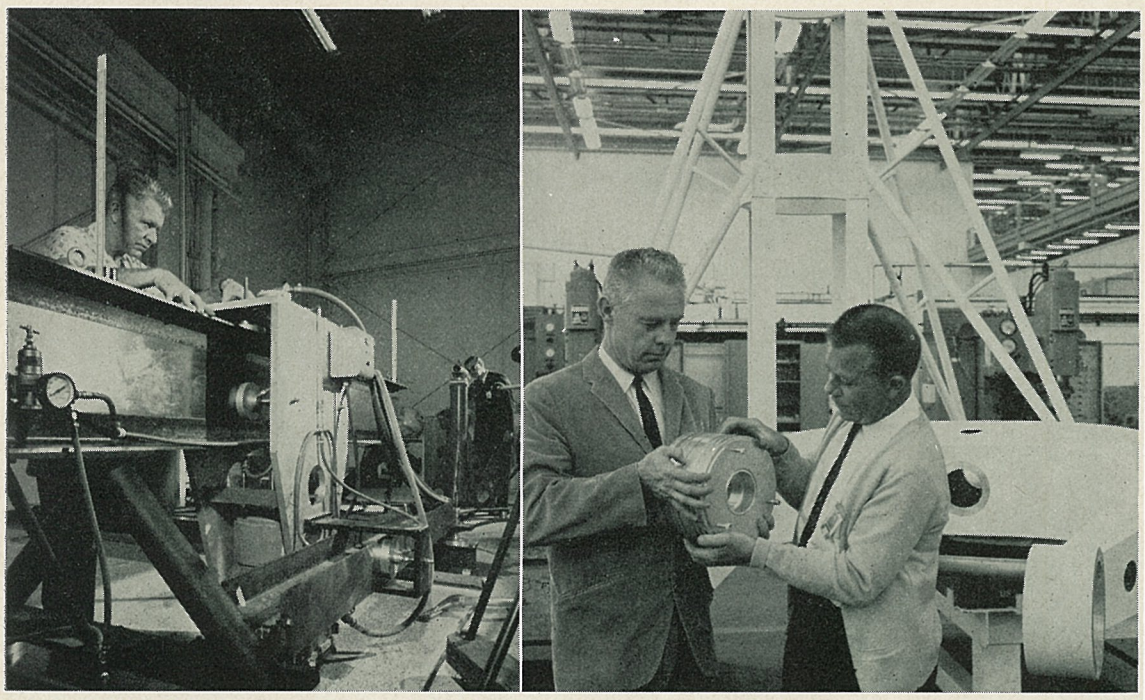
PACKAGE SPECIALIST ATTENDS GATHERING

J. J. Janssen, GD/Convair packaging specialist, represented the division as a member of the Preservation and Packaging Engineering Committee of Aerospace Industries Association at the winter meeting last week (Dec. 7-8) in St. Louis, Mo.

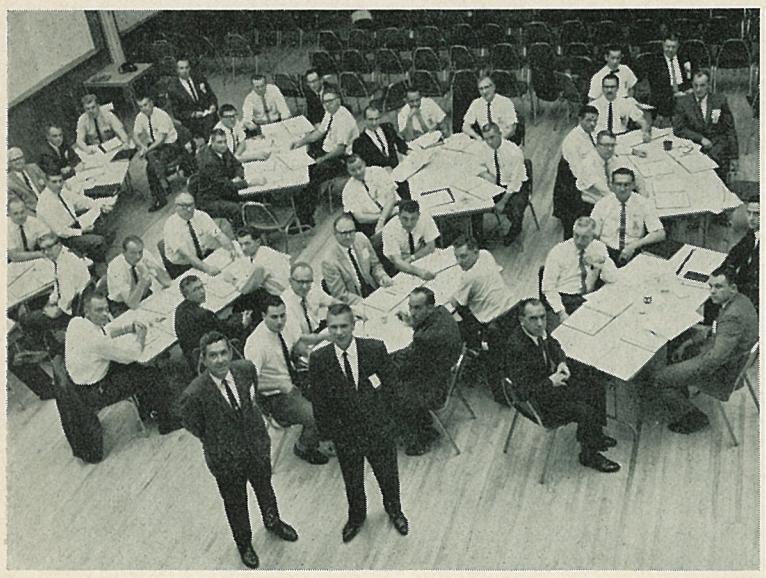
Bargain Christmas Dinner Promised

Prophet Company cafeterias serving General Dynamics installations in the San Diego area will feature their annual "bargain rate" Christmas dinner on Dec. 22.

Bill Rickman, district supervisor, reports ham will be the entree this year. A complete dinner (ham, vegetables, salad, beverage, dessert, roll and butter) will be available for just $1.



FLOATING ON AIR—In photo at left, George Erickson, Dept. 490-2, operates special air bearing-mounted grinding tool under direction of E. J. Barnett, Dept. 451, background, while grinding floor for GD/Astro's Free-Space Dynamic Simulator to fine tolerance. At right, R. E. Urmston, Dept. 262-3, and E. L. Christian, Dept. 290-2, examine air bearing sets for "arms" of simulator, while main assemblies of unit form background.



NUMBER TEN—These men, members of GD/Astro's tenth Value Engineering seminar of 1964, will complete two-week seminar this Friday, bringing to nearly 400 number of employees completing combination classroom-workship course this year. Standing in foreground are instructors, Harold Sicard, left, and Everett Lindem.

Value Engineering Trainees At Astro Nearly 400 in '64

GD/Astronautics' final Value Engineering seminar of 1964 will conclude this Friday (Dec. 18) when 40 more GD/Astronautics folk (including two members of the AFPRO staff) complete Seminar 10-64.

This brings to nearly 400 the number of GD/Astro employees, Air Force, NASA and personnel of other General Dynamics divisions, who have participated in the ten two-week workshop programs conducted this year.

Seminars, which combine classroom instruction with practical VE training using actual hardware projects, are conducted by educational services (Dept. 130-3), in line with the total division cost reduction and value control effort coordinated by Manager E. D. Heller.

Instructors are Everett Lindem and Harold Sicard, both Dept. 130-3.

VE teams and projects for the current seminar are:

Team #1—LOX pressurization line diffuser (submitted by George Webber). C. W. Banks, Dept. 420-5; R. W. Brown, Dept. 373-1; H. E. Harper, Dept. 556-7; F. R. Jaeger, AFPRO; Ken Theilig, Dept. 527-0. Project leader: C. V. Pereira, Dept. 148-2.

Team #2—Staging separation system (submitted by Al Schindler). B. A. Buell, Dept. 142-2; D. O. Dwyer, AFPRO; D. G. Mudd, Dept. 556-5; T. Proppe, Dept. 380-1; Ivan Raney, Dept. 422-1. Project leader: Pereira.

Team #3—Separation mechanism latch assembly (submitted by Schindler). C. F. Back, Dept. 568-1; T. E. Demitrowicz, Dept. 420-4; R. Lasley, Dept. 527-3; W. F. McGrath, Dept. 382-0; C. W. Nofflett, Dept. 528-2. Project leader: F. E. Roeder, Dept. 130-3.

Team #4—First stage separation fitting assembly (submitted by Webber). J. F. Davis, Dept. 813-0; R. Chavez, Dept. 835-1; R. K. Johanson, Dept. 375-1; Hal Smith, Dept. 568-1; R. E. Knudsen, Dept. 592-0. Project leader: Roeder.

Team #5—Helium bottle coolent vent duct (submitted by Sherm McBain). R. T. Crossman, Dept. 422-2; J. Morrell, Dept. 336-1; R. I. Gordon, Dept. 661-4; J. D. Gruner, Dept. 504-1; G. Williamson, Dept. 141-3. Project leader: T. R. Devin, Dept. 403-3.

Team #6—Propulsion section ambient helium bottle staging (submitted by Schindler). R. R. Brumfield, Dept. 780-3; H. G. Mileur, Dept. 663-5; F. L. Armstrong, Dept. 756-2; Gene Devlin, Dept. 170-2; R. Williams, Dept. 568-1. Project leader: Devin.

Team #7—Riveted shell support assembly (submitted by Schindler). R. D. Beare, Dept. 833-3; Joe Dragonetti, Dept. 250-2; C. E. Taylor, Dept. 971-5; J. Walz, Dept. 142-4; D. Ward, Dept. 694-0. Project leader: R. R. Dodds, Dept. 557-3.

Team #8—Disconnect shield (submitted by McBain). R. Geary, Dept. 652-2; F. N. Shepard, Dept. 971-5; T. Sieverson, Dept. 568-1; W. M. Starr, Dept. 130-3; J. Baer, Dept. 504-2. Project leader: Dodds.

Yule Security Rules Outlined For Astro Plants

Security regulations governing in-plant activities at GD/Astronautics during the upcoming holiday period remain in effect as in years past.

Luncheons may be held in-plant Dec. 23, but must be confined to regular lunch periods. Out of plant luncheons are discouraged. Food and warming equipment may be brought into the plant, although catered meals must be picked up at security gates.

Packaged items brought into or taken out of the plant are subject to inspection. Authorized property passes will be required for removal of all sealed packages, including those gift wrapped. Obvious personal gifts in unsealed packages will require no property passes for removal from plants.

Lights on in-plant Christmas decorations will be limited to those installed by plant engineering on company-provided trees. All decorations erected within the plant must be fireproof and must be inspected by the fire department **PRIOR** to being erected.

Those desiring to erect decorations may contact the fire department, ext. 1811, to arrange for inspection. Approved items will be tagged. Non-tagged decorations discovered in routine security patrols are subject to removal without notice.

MONTH'S "MAN" — Receiving Management Club "Man of Month" award recently for outstanding contribution to GD/Astro CIP program from Gary Gonlag, left, club treasurer, was G. S. Blackburn, Dept. 362-2. He received engraved plaque.

Dues to Increase Effective Jan. 1 At Health Club

General Dynamics employees or members of their families planning to join ARA Health Club can realize substantial savings on a year's membership cost by doing so before Jan. 1.

On that date, annual membership dues will be raised from the present $12 per year for individuals ($18 for the whole family), to $18 per year for individuals, $27 per year family rate.

Present Health Club members will continue to pay the current low rate for the duration of their present membership. During 1965, all new or renewed memberships will be at the new rate.

ARA Health Club offers members the use of outstanding facilities and equipment, plus guidance in personalized health or body-building plans from professional instructors.

Information is available from ARA Headquarters, ext. 1111.

New Ballroom Class Slated For January

A new class in ballroom dancing designed especially for those who have completed a beginners' course, or wish to "brush up" on the latest steps will be sponsored by ARA starting next month.

First session is scheduled for 7:30 p.m., Jan. 11 in ARA Clubhouse.

Although registration will be conducted at the first meeting, those planning to enroll are encouraged to indicate their interest via AVO to ARA Commissioner L. F. Moeller, Mail Zone 191-00.

The class will be conducted by a professional instructor and will meet for one and one-half hours each Monday over a 12-week period. Total cost is $18 per couple.

Snow Country Trips Spark Ski Activity

Twenty-two skiers made the ARA Snow Ski Club's weekend trip to Big Bear Dec. 4 and 5, and 35 have signed for a trek to the Lake Tahoe area Dec. 30 through Jan. 3, where snow conditions are reported excellent.

Club members receive discounts of 50 cents each trip at Moonridge and Snow Summit, and are offered a day at half-price at Snow Forest

Astro employees and their families may join the club at its meeting the first Wednesday of each month in ARA Clubhouse. President Vern Norris has reported that present membership stands at 102.

Xmas Party Date Set by Rockhounds

ARA Rockhounds Club will hold its annual Christmas party Friday (Dec. 18) at 7:30 p.m. in ARA Clubhouse.

The party will get under way following a brief business session, and will include a gift exchange for which participants should bring a $1 package tagged as appropriate for a man or woman. Favors will be distributed to the children.

Program highlight will be showing of a Walt Disney film, "Bear Country."

Commissioner Fred Baugh, ext. 3580, can supply additional information.

Controller's Golf Draws Over 130

GD/Astro's third annual controller's golf tournament set for Dec. 31 at Stardust Country Club has more than doubled in size this year, with 132 entries already in.

Previous events have attracted 55 to 60 players.

Employees eligible to play and who have not yet been contacted can make reservations for the 18-hole handicap affair by calling Bob Stevens, Plant 71 ext. 2481.

Sports & Recreation

ARA Area to Close For Holiday Periods

Facilities in the Astronautics Recreation Association Area will be closed during the upcoming holiday periods.

Following completion of regular events held Dec. 22 and again Dec. 30, the Area will suspend operations for each of the following four days the plant is not in operation.

Golfers' Year Ends, 1965 Plans Begun

New membership cards for ARA Golf Club participants will be available at employee services (Bldg. 8) immediately after the New Year's holidays, and a list of 1964 tournaments will be issued shortly thereafter.

Final contest of 1964, a Pinehurst event, was played Dec. 5 and 6 at Bonita.

Gross winners in the 0-16 handicap were Kay Stites, Ernie Stuchly, Jack Ross, Harry Richards, Dick Tobias and Jack Nichols, with low net winners in this bracket, Clinch Crocker, Harold Wilson, Cliff Gordon, John Doggett, Jack Gray, Dave Jorgenson, Jack Weaver and Alex Bezverkov.

In the 16.5-and-up category, gross honors went to Lee Kite, H. P. Rask, Bill Geopfarth, Harry Bodwell, Ed McKenzie and Elmer Irwin. Net winners were Wayne Riner, Ronald Roth, J. V. Backstrom, C. A. Hicks, Gene Armstrong and Art Braidic.

Knutson Wins Two ARA Pistol Contests

ARA Pistol Club has declared a moratorium on matches over the holidays, with action to pick up for 1965 at 9:15 a.m., Jan. 10 at San Diego Police Pistol Range.

In contests Nov. 22, J. S. Knutson won a "double-header," with top score of 293 in master class of a .22 Police Course match, and a winning 274 in a Center Fire round.

In the Police Course, he was trailed in class by Harry Black and Roscoe Anderson who scored 291s, with 14 and 9X's respectively. Bill Dittmann won expert bracket with 264, with a 262 from Don Hale second. Byron Clapper fired 255 for sharpshooter honors.

Following Knutson in the Center Fire contest were ARA Commissioner Bill Geopfarth, 257; Roland Schneider, 236; and Black, 230.

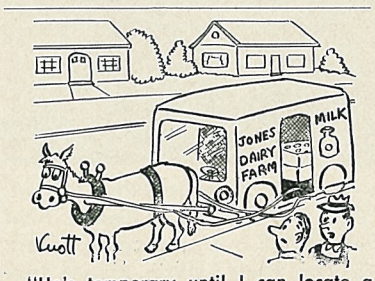
'Safaris' Are Signed For Big Teen Dance

"The Safaris," known for their waxings of "Wipe Out," "Surfer Joe," and "Boss Barracuda" will appear at ARA Teen Club's big Christmas dance Saturday (Dec. 19), 7:30 to 11:30 p.m. in ARA Clubhouse.

The Los Angeles group has become one of Southern California's most popular teen bands, according to ARA Commissioner John Hess who arranged the booking.

Good school clothes have been prescribed for the event, and admission is set at 50 cents for members, 75 cents for guests.

Hess said members with guests may invite a guest couple, while those attending "solo" may bring one guest.



"He's temporary until I can locate a good mechanic to repair the engine."

Surprise!

Astrolina Joins Stable at ARA

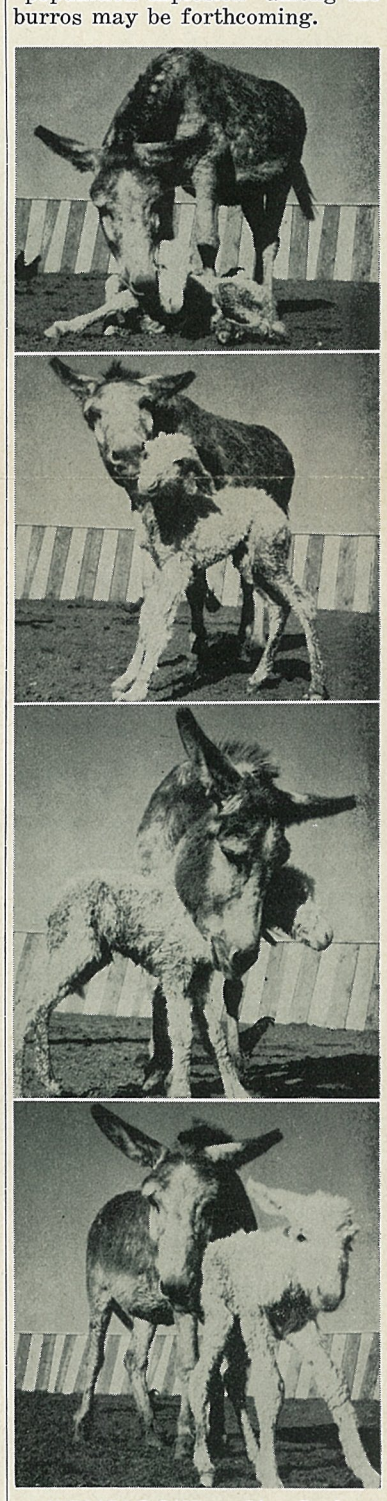
And then there was Astrolina!

Since May, the ARA burros—Zippy, Cocoa, Taco, Big Red, Curley and Curley's Sister—have provided rides at 10 cents a trip for Astro youngsters visiting the ARA Area on Sundays.

But then last month—suddenly there was Astrolina.

Perhaps there was an omen in the foal's Friday-the-13th birth date. Anyway, the mother — Big Red — obviously gave the lie to what was intended as a masculine name, and as a result there was a similar re-evaluation in Curley's case.

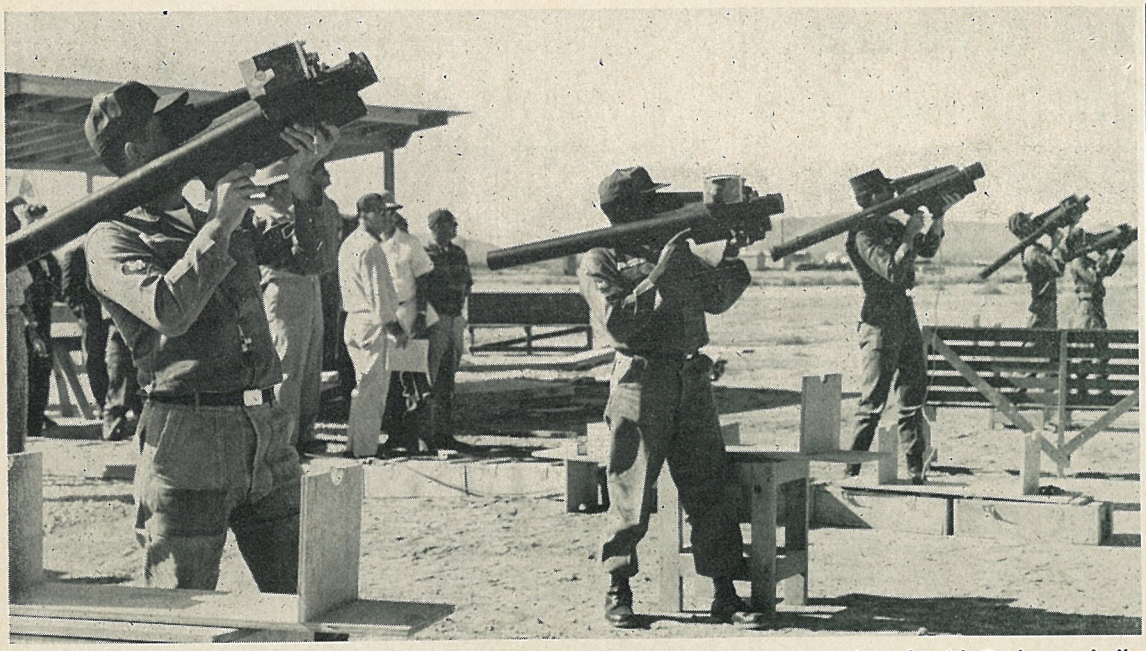
At the moment, then, there are seven female burros in the ARA Arena, although Astrolina won't be working for a while. What's more, a careful look at Big Red's companions indicates a further "population explosion" among the burros may be forthcoming.



MONOLOGUE — Big Red to new daughter, Astrolina: "Welcome aboard. You'll meet lots of nice people around ARA . . . But, confidentially, there's something you should know about humans . . . They're always on your back, see . . . Hey! Come back here! After all, the chow's good."

CINEMA 21 DISCOUNT COUPONS AVAILABLE

Astro employee services has free coupons entitling employees to 59-cent discount on admission to "Youngblood Hawke" now showing at Cinema 21. Coupons are valid Sundays through Thursdays and at all matinees.



ON FIRING LINE — Army and Marine Corps enlisted men track target aircraft with Redeye missile launchers fitted with special electronic training devices. Training is part of three-week joint service familiarization program for new weapon, the world's smallest guided missile system.

ON TARGET — Secretary of Army Stephen Ailes tries Redeye simulator during recent Association of U.S. Army meeting in Washington, D.C. At left is Ray Lubeck of GD/Pomona's Redeye project office and Jack Sloan of GD/Pomona president's office. Many high ranking officials were included in estimated 3,000 persons visiting General Dynamics display — a joint exhibit of GD/Pomona and Canadair.

Army, Marine Gunners Trained For Redeye

The first class of Army and Marine Corps enlisted men qualified as gunners for the Army's shoulder-portable Redeye missile have completed training at Fort Bliss, Tex., the Army announced recently.

The trainees came from the Air Defense Board and First Guided Missile Brigade, Fort Bliss, the Artillery Board, Fort Sill, Okla., and the Marine Corps. They were trained in preparation for conducting Redeye engineering service tests.

The joint three-week familiarization program was conducted by the Air Defense Board—an element of the Army's Test and Evaluation Command, Army Materiel Command — and supported by General Dynamics/Pomona.

The course was designed to train men in handling and operating the approximately 30-pound Redeye to the degree of proficiency necessary for rapid and effective engagement of enemy aircraft in combat.

Since Redeye is a joint development of the Army and Marine Corps, both will participate in the testing program and both will issue Redeye to combat units as the system becomes operational.

GD/Pomona personnel taking part in the training program at Fort Bliss were W. H. Burns of customer training (Dept. 3), Hal Brown Jr., J. H. Barron and W. E. Ronsheimer of field test (Dept. 6), D. A. Lasby of Redeye program project office (Dept. 6) and Irv Fishlow of Redeye program management (Dept. 15).

'Bravo' Readied For New Task

"Bravo," GD/Convair's first long range telemetering buoy, which recently was subjected to 70 mile-per-hour winds during Hurricane Isbell off the Florida coast, is being readied for a new role in a deep-water anchorage.

The buoy prototype, now in an intensive test program for the Office of Naval Research, will be relocated some time after the first of the year in 1,000-ft. water depth on the axis of the gulf stream to measure mooring loads in the presence of strong currents. Robert Devereux, Convair oceanography program manager, says that currents up to 5 knots, nearly equal to the strongest ocean currents recorded in any part of the world, will sweep by the buoy.

New anchorage will be 14 miles off Hollywood Beach, Fla., directly east of the former location. The buoy will remain in its new mooring site approximately a month.

At present Bravo is at the Marine Acoustical Services dock in Miami for a complete system checkout. During the six weeks the buoy had been in Florida waters its systems accumulated the same amount of usage they would have experienced in almost a year of normal operation.

★ ★ ★

Subcontract for fabrication of the steel hull for Convair's second long-range telemetering buoy, "Alpha," has been awarded Rohr Corporation's Antenna Division, San Diego, Calif.

Completion of Alpha, destined for West Coast tests, is slated for mid-April, according to Convair's project manager, Robert Devereux.

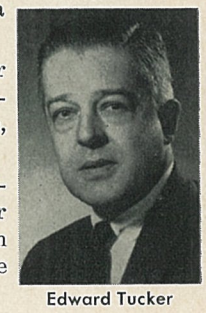
This prototype will be anchored off the California coast at Point Mugu to study behavior of the energy conversion equipment inside the buoy under known conditions of electricity demand, and to evaluate the suitability of the buoy as an environment for the electronics equipment it will eventually contain.

Devereux also announced the addition of Hal Driscoll, senior research engineer, formerly of Astronautics, to the oceanography program. Driscoll, who had been in Convair operations planning before transferring in 1959 to Astro in pre-design and advanced systems development, brings imimportant capabilities to the program, Devereux said.

Aird Named GD Asst. Treasurer; Formerly at Canadair Ltd.

PETER J. AIRD, formerly assistant treasurer for Canadair Limited, has transferred to New York City as Corporate assistant treasurer, reporting to H. K. Pedersen, Corporate treasurer.

Aird, a 1949 McGill University graduate with BS in commerce, joined Canadair in 1959. He previously had been a partner in a Montreal accounting firm.



Edward Tucker

EDWARD J. TUCKER, former general auditor for American Airlines, has joined General Dynamics Corporation, reporting to William T. Lake, comptroller.

Tucker, a certified public accountant and Fordham University graduate, was a special agent for the FBI from 1941 to 1946 and was with Gahagan Construction Co. as assistant treasurer before joining American Airlines.

People Mobility

Interdivisional Transfers

(Following are recent personnel transfers among General Dynamics divisions. In parentheses are dates when individuals joined the company.)

PAUL R. PEARSON (1961) from Astro to Convair flight test engineering; **RONALD A. LANGE** (1950) from Astro to Convair engineering; **FRANK BERRY** (1957), **WALTER E. BLACK** (1952), **HENRY M. FENDRICH JR.** (1964) from Astro to Electronics-San Diego engineering; **HOMER E. ROBINSON** (1958) from Electronics-San Diego to Pomona production engineering.

JOHN A. WHALEN (1956), **HENRI GUYADER** (1963), **WILLIAM L. ECKERT** (1956) from Astro to Convair engineering; **BILLY VAN FREY** (1955) from Fort Worth to controller's office, Corporate Headquarters; **ROBERT A. SCROFANO** (1963) from Astro to Electronics-SD; **JOHN MARROQUIN JR.** (1956) from Astro to Convair flight test engineering; **LESLIE L. O'NEAL** (1958) from Stromberg-Carlson-SD to Electronics-SD purchasing.

WILLIAM R. SKINNER (1961), **GEORGE H. MOORE** (1960), **MAXWELL FRANK** (1956) from Astro to Electronics-SD; **HUBERT C. WATTON** (1956), **GORDON M. JACKSON JR.** (1961), **RODNEY G. WHITEAKER** (1956) from Astro to Convair engineering; **JOHN T. PERKINS** (1959) from Astro to controller's office, Corporate Headquarters; **LARRY A. DENNIS** (1959) from Astro to quality control, Electronics-SD.

RICHARD G. ROSEN (1962) from Astro to international department, Corporate Headquarters; **RICHARD L. MAISON** (1961), **RUSS D. CRIPE** (1959) from Astro to Convair engineering; **WILLIAM B. HANNA** (1955) from Fort Worth to Pomona Mauler Systems management inspection; **HAROLD Q. DRISCOLL** (1951), **HAROLD D. SMITH** (1956) from Astro to Convair engineering; **JESSE A. MAY** (1950) from Electronics-SD to Convair cost estimating; **CALVIN C. WHITE** (1956) from Astro to Electronics-SD.

WILLIAM R. SMITH (1962), **MITCHELL S. LANDOS** (1957) from Astro to Electronics-SD engineering; **JAMES C. RATLIFF** (1957) from Pomona to Corporate office (Huntsville, Ala.); **RAYMOND C. SEBOLD JR.** (1958) from Astro to Convair purchasing; **CHARLES E. KINNEY** (1961) from Astro to Fort Worth configuration inspection; **ARNOLD H. LAKRITZ** (1961), **OVID L. WILLOUGHBY** (1950) from Astro to Electronics-SD engineering; **CHARLES P. RAINS** (1964), **ROBERT W. McNAMARA** (1962) from Astro to Convair engineering; **WALTER M. WALKER** (1960) from Astro to Convair manufacturing research and development.

Pomona Lets $200,000 Contract For Redeye Assembly Facility

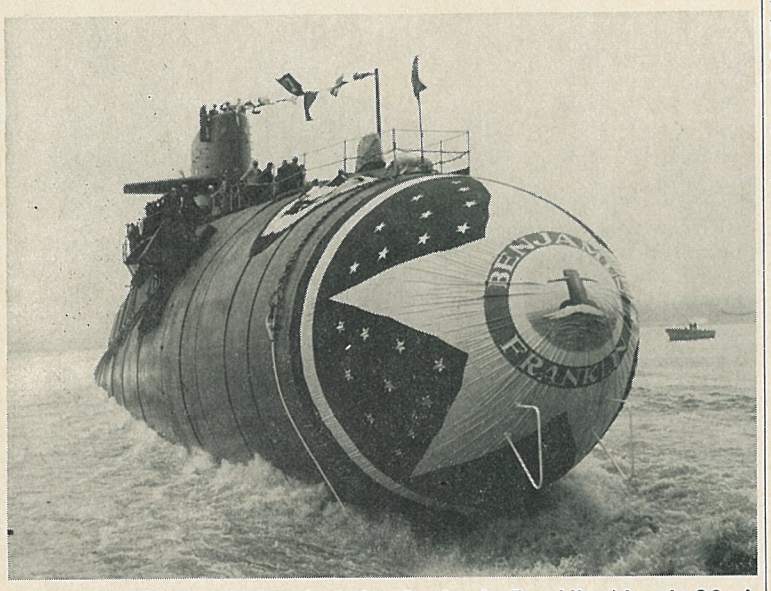
GD/Pomona has awarded a contract in excess of $200,000 to Nielsen Construction Co., of San Diego for a complex of buildings at the Redeye missile final assembly and test facility north of San Diego, G. E. Sylvester, vice president-operations, announced last week.

The facility is located on company-owned land adjacent to the government-owned Sycamore Canyon Test Site operated by Astronautics division.

The Redeye complex will include an assembly building, office, warehouse, small guard house and three separate small buildings for storage.

Completion of the buildings is expected by early March of 1965, and maximum of 25 persons are expected to be employed at the facility by the end of 1965. Bulk of Redeye production will be accomplished at the Pomona plant.

Grading of site and roads has been completed under a contract awarded last October to R. E. Hazard Construction Co. of San Diego. Paving of the roads and installation of 6,000 feet of 8-inch water main to the site are nearing completion.

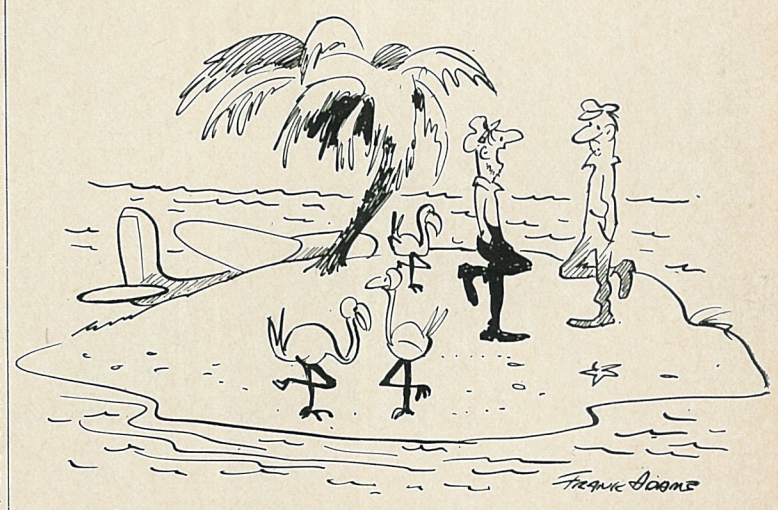


BIG SPLASH—Polaris submarine Benjamin Franklin, Navy's 32nd, splashes into Thames River during Dec. 5 launching at Electric Boat Division, Groton, Conn. The 425-foot, 7,000-ton submarine, scheduled to join U.S. Fleet next year, is 12th Fleet Ballistic Missile submarine to be launched by Electric Boat.

GD/NEWS Schedule To Slip One Week

Today's issue of **GD/NEWS** (Dec. 16) will be the last published in 1964.

Because of the conflict of year-end holidays with the usual every-other-Wednesday publishing schedule, **GD/NEWS** will not appear Dec. 30 but will slip schedule one week, coming out Jan. 6 instead. The normal bi-weekly schedule will continue thereafter.



"Do you realize we've been waiting here six months?"